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Worldwide Report

ENVIRONMENTAL QUALITY

No. 245

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AUSTRALIA

BRIEFS

VICTORIA ANTISALINITY DRIVE--The State Government yesterday announced a $15 million salinity programme for irrigation areas of northern Victoria. The Minister for Soldier Settlement, Mr. Houghton, and the Minister for Water Supply, Mr. Granter, announced the first of several proposals to be implemented following recommendations by an all-party Parliamentary public works committee. Implementation of the proposals, over 10 years, will involve loans for farm works, research and irrigation extension. Mr. Houghton said the Government will lend irrigators at least $200,000 this financial year to encourage them to take measures that mitigate the effect of water-logging and salinity in the Murray River area. On-farm projects eligible for assistance include surface and sub-surface drainage, re-use schemes, diversion structures on Water Commission drains, improved land layout and methods of water distribution. [Excerpts] [Melbourne THE AGE in English 22 Jan 80 p 3]

SALINITY SEMINAR--An international seminar on water salinity will be held in WA in November. Overseas and interstate experts have been invited to attend. The seminar will be in three parts--a seminar at Murdoch University on November 12 and 13, a field trip to South-West salinity areas on November 14 and 15 and a technical workshop on November 17, 18 and 19. There will be a final session on November 20. [Text] [Perth THE WEST AUSTRALIAN in English 18 Jan 80 p 18]

ACTION ON HERBICIDE--The use of the controversial herbicide 2,4,5-T was suspended yesterday by Leichhardt Municipal Council after a similar move by Hornsby Shire Council on Thursday night. Several other councils in and around Sydney, including Blacktown, Ku-ring-gai and Ryde, have stopped using the chemical in recent months. But Mr Jack Snelson, who advises the Federal Government on pesticides, said he was disappointed by the councils' action. He said there was no justification for concern over 2,4,5-T if it was used according to instructions which provided "more than adequate" safety margins. Mr Snelson said yesterday: "There is unanimous agreement among all State health and agricultural authorities, who have considered this issue repeatedly over the last 10 years, that there is no need for further restrictions or limitations on the use of eight 2,4,5-T or 2,4-D." There had been at least 12 committees of experts which had considred the issue and there had been no difference of opinion about it. [Excerpts] [Sydney THE SYDNEY MORNING HERALD in English 19 Jan 80 p 3]

ACTION ON OIL SPILLS--The West Australian Government intends to impose conditions on off-shore oil-exploration companies as part of a campaign to reduce the chance of a major oil-spill polluting the coastline. [Text] [Canberra THE AUSTRALIAN in English 14 Jan 80 p 2]

DEFOLIANT DANGERS--CSIRO scientists have discovered farmers are using dangerously high concentrations of a herbicide which poses a threat to crops and may contaminate domestic water systems. Research in the Murrumbidgee Irrigation Area in NSW has revealed that concentrations of one widely-used herbicide, diuron, could be as much as 80 times higher than allowed by law. Under NSW's Clean Waters Act the permissible level of diuron is 0.1 parts per million. But the researchers found levels of between 0.5ppm and 8ppm. Diuron is a defoliant used to control weeds in irrigation canals. It is apparently harmless if used in the permissible amounts, but farmers have been using increasing concentrations to boost the chemical's active life span. Details of the report were released yesterday in the CSIRO's quarterly magazine, Rural Research. [Excerpts] [Canberra THE AUSTRALIAN in English 10 Jan 80 p 3]

THREAT TO REEF--The Great Barrier Reef could be threatened again by a plague of Crown of Thorns starfish, Queensland University zoology reader, Dr Robert Endean, said yesterday. Populations of starfish feeding on Green Isalnd reef, 25 km north-east of Cairns, were similar in size and distribution to the infestations that were monitored on the reef in 1962, he said. Those grew into a plague that devastated 240 of the 1400 reefs that form the Great Barrier Reef in the 1960s and early 1970s. Dr Endean said: "There are at least 150,000 starfish on the Green Island reef. All indications point to another plague in the next few years." [Excerpt] [Brisbane THE COURIER-MAIL in English 5 Jan 80 p 18]

GRANTS TO ENVIRONMENTAL GROUPS--Five environmental groups have received grants totaling $30,000 from the State Government. The Minister for Planning and Environment, Mr Landa, said the Total Environment Centre, the Environt Centre (NSW) Pty Ltd and the National Parks Association of NSW would each receive $7,500. The Australian Conservation Foundation will receive $5,000 and the Association for Environmental Education $2,500. [Text] [Sydney THE SYDNEY MORNING HERALD in English 3 Jan 80 p 2]

QUEENSLAND AREAS THREATENED--Natural areas of the State risked destruction on an unprecedented scale, the Queensland Conservation Council warned yesterday. Urgent action would be needed to protect heritage areas in 1980, it said. The council co-ordinator, Miss Elizabeth Bourne, cited seven areas as being of key importance and soon to be destroyed by "unwarranted development." These were Moreton Isalnd; rainforest lowlands north of Cape Tribulation, north of Cairns; the Mt Etna Caves near Rockhampton; and in the Moreton area, Pumicestorne Passage, Raby Bay, Currumbin Creek and the Southport Broadwater. [Excerpt] [Brisbane THE COURIER-MAIL in English 2 Jan 80 p 13]

STUDY ON WASTE--Canberra: The Confederation of Australian Industry will carry out a study on the management and disposal of hazardous chemical wastes in conjuntion with the Australian Environment Council. In its latest newsletter, the confederation said that suitable facilities for the disposal of a significant range of chemicals were not now available. It siad: "Increasing quantities of chemical wastes are being stored at a number of locations throughout Australia, in some cases in circumstances that are less than satisfactory in environmental terms." The study will be carried out over six months. AAP. [Text] [Perth THE WEST AUSTRALIAN in English 20 Dec 79 p 58]

CSO: 5000

PLAN TO DRAIN OUT SALINE WATER IN SIND UNDER CONSIDERATION

Karachi MORNING NEWS in English 23 Feb 80 p 3

[Text] Hyderabad, Feb. 22: Mr Abdul Rashd Shaikh, General Manager of the Southern Zone of WAPDA, said here yesterday that a project costing Rs 70 million to connect the Left Bank Outfall Drain (LBOD) (beginning Tando Bagho and culminating into the sea at Dhoro-Puran in the Lower Sind) with Nawabshah has been taken up in hand.

In an exclusive interview with APP, he said with the completion of the project in a three years time, the districts of Nawabshah, Sanghar, Hyderabad, Tharparkar and Badin are to benefit.

The LBOD is channel to drain out saline water from the irrigation lands, so that their fertility is continued and increased.

Shaikh Rashid said that the plan was to ultimately cover the whole stretch of fertile lands on the left bank of river Indus, up to Sukkur in the north.

In this connection, he disclosed that Sr MacDonald and Partners, the British consultants have surveyed and investigated the alignment of the LBOD. He said the firm has prepared the feasibility and the final report of the consultants will be available by April next.

For the extension of the stretch up to Nawabshah, work on which is in full swing, two hovercrafts have been acquired by the WAPDA for helping in the smooth execution of the work in the modern and swift manner.

The two vehicles were given to WAPDA by the British government as a technical assistance under the Colombo Plan.

CSO: 5000

ROK POLLUTION SITUATION BECOMING GRAVE

Seoul THE KOREA HERALD in English 31 Jan 80 p 5

[Excerpt]

The rapid industrialization and economic development of the past decade created a pollution problem in Korea.

A greater need for clean air and clean water is expected to be felt in the 1980s.

The office of Environment was inaugurated Jan. 15 amid such concern.

In fact, the country's pollution situation is becoming grave. The atmospheric contamination of Seoul is described as one of the worst in the world.

According to the survey report made available by the Ministry of Health and Social Affairs, sulphuric gas in the air of Seoul was measured at a high of 0.151 ppm (particle per million), far exceeding the permissible level of 0.05 ppm recommended by the World Health Organization (WHO) and even the 0.15 ppm maximum allowable extent set by law. Air pollution in large cities such as Pusan, Taegu, Inchon and Masan was measured at higher than the standard level recommended by WHO.

The Han River, the source of potable water for Seoul citizens, is becoming increasingly foul.

Deformed fish have found in the upper part of the river in recent years. The discovery indicates the river has been contaminated with heavy metals, chemicals and agricultural insecticides. According to the results of the survey conducted by the Ministry of Health and Social Affairs during January-March last year, water pollution in four major rivers, including the Han, Naktong, Kum and Yongsan, has become worse over the years.

The ministry said the BOD in the four major rivers was found to be more than 4.3 ppm, compared with the 6 ppm permissible level.

In the Han river, the BOD rose to 9.5 ppm in midsummer and in winter days in dry weather.

The sea around such industrialized areas as Pusan, Masan and Ulsan is seriously polluted with heavy metals. The mercury content found in water samples from Pusan was 0.016 ppm, a level higher than allowable 0.005 ppm. In Masan and Ulsan, the content was 0.016 ppm and 0.013 ppm, respectively. Cadmium levels were found 0.018 ppm in Pusan, 0.014 in Masan and 0.064 ppm in Ulsan. Copper and lead were detected in amounts exceeding the allowable levels. Such water pollution can damage laver and other seaweed and shellfish cultivating nurseries in the coastal areas in the vicinity of industrial complex.

Rice, the staple grain of Koreans, was also found to be polluted with mercury. The survey results conducted last year by the National Institute of Health, the National Environment Research Institute and the Agricultural Technology Research Institute, revealed that the rice in some of the surveyed areas was found to contain more than 0.005 ppm of mercury. The mercury contamination is not so serious. The figure is lower than the permissible level, 1 ppm, in Japan. But the survey showed that chemicals contaminated farmland and crops.

CSO: 5000

CZECHOSLOVAKIA

CSSR'S ECOLOGICAL PLANS THROUGH 1985

Prague TVORBA in Czech No 2, 9 Jan 80 p 3

[Article by Karel Nutil, deputy minister in the Ministry of Technological and Investment Development of the CSSR: "Managing the Environment Thriftily"]

[Text] The basic orientation of the scientific-technical development depends directly on the essential realization of effective measures aimed at the protection of the environment. If we wish, for instance, to insure our self-sufficiency in the production of foodstuffs as much as possible and to achieve the greatest possible savings in energy needs, we must manage the resources which the land gives us as well as possible.

We are trying to prevent damaging influences, which threaten the environment, primarily in the sectors and branches where their causes originate. This does not mean that we would relieve the enterprises of the responsibility for the operation of the production machines, nor the leakage of by-product materials, or of dangerous substances, or that energy should be actively reduced in place of combustion or production. Together with this, we are seeking the optimal ways by which we can use the by-products and energy. The solution of this complicated problem is directly dependent on the development of science and technology.

We regard the technical development serving to protect water as an example of a successful solution of a former problem. In enclosed water and waste product complexes, we regain valuable materials which are used as secondary raw materials or energy sources. Similarly, it is also possible to use the raw manure from large-scale cattle barns. During its composting methane gas is produced from which we obtain heat energy. From the material which remains from this process, we can make concentrated fertilizer. The realization of these possibilities depends on the solution of chemical-technical processes and the delivery of machines. Consequently, it does not depend on one industrial or agricultural branch.

The Basic Goals of Environmental Protection

We understand the development of civilization and care for the living and natural environment as dialectically mutually conditioned processes. The socialist order creates favorable conditions to gradually create harmony between the well-rounded development of man and the quality of the environment. In this spirit we are also creating the concept of a technical policy from which will come programs for scientific-technical developments.

Preventing the occurrence of possible causes of damage is the chief principle of environmental protection to which the quality of management work must also contribute. The present problems, for example, result from the tendentious resort approach which prefers group and local concerns to the detriment of the whole community. The conclusions of the 15th CPCZ Congress warn especially against the infringement of the principles of democratic centralism for the management of society. The least attempt to enforce a resort approach in relation to society-wide concerns brings unfavorable economic, political, and other results. Each loss, which results from the thoughtless use of the resources of our land, delays the development of our national economy, to which also belongs the maximum possible harmony with the ecological conditions of the country.

Scientific-technical development which protects the ecological aspects, reckons with them, and creates favorable conditions for the development of production and regional and district planning especially contributes to prevention. Rapid application of the results of research to planning and managing of production and to the national administration can clearly affect the further development of the productive strength of the entire society.

Methods for Managing Scientific-Technical Development

In 1977 the Federal Ministry of Technological and Investment Development together with other central organs inaugurated work on a scientific-technical project for the ecological optimalization of the use of the country. This is the project which we know under the name Ecoprogram. The goal of this unconventional approach, divided into three time-period stages to 1990 is gradually to ensure harmony between the development of the productive branches and the ecological conditions of the natural systems in the CSSR. The Ecoprogram derives from the demand for further economic development of our society, from the present and future states in the area of ecological equilibrium of the land and the natural resources. Out of concern for its realization, new forms of coordination have come into existence, entire creative teams and comprehensive rationalization brigades have been created.

The ecological tasks established by the present 5-year period include, for example, the creation of model projects for antierosion protection of the land in Moravia. The improvement of the land arrangement in Tachovsko, model solutions of the systems for fertilizing and agrotechnique on agricultural lands belong to the current tasks. A model system for managing land in the field of water resources is also important.

In the future it will be increasingly important also to pursue projects for so-called dispersions of greenery in agricultural regions. Research has shown that we cannot take risks either with the mining of peat which has an influence on the water regulation of the country. We must occupy ourselves with the optimal methods for forest improvements; already today we can be convinced of the success achieved in the recultivation of a selected waste dumps, quarries, and spoilbanks remaining after the mining of coal in the North Moravian Region. We are also successfully confronting the question of what products to grow in the threatened regions of the Podkrusnohorsky basin.

The Significance of the Information System

In the area of the protection and creation of the living environment, integrated information systems were built in recent years. We have developed a basic register of data; we have introduced into operation systems of programs controlled by computer databanks in which data on the protection of or threats to the environment are coded. We have been systematically progressing in the legislative area, too. In connection with the new code for land planning and construction regulation, methods for designers also were developed. A component of this offensive approach is the developing of criteria necessary to the improvement of the natural elements and resources, to the categorization of the lands of the CSSR from the point of view of the optimal use of the land. In the framework of the screening of the selected programs for the technical development of selected branches, among these are agriculture, fuel mining, power, and some other industries; we have endeavored to influence the management of further research tasks so that already in this phase it would be guaranteed that in the future an infringement of the ecological equilibrium of the land does not occur.

In the following period we want to devote chief attention to working out scientific-technical projects for ecological systems of selected model districts. These projects of the Ecoprogram will concentrate all of the available information about the ecology of the land, natural resources, about the richness of life and the total state of the environment. In this connection the confrontation of our present state and the intentions of the individual production and mining resorts with the society-wide concerns for the rational use of the land is especially significant for us. The protection and creation of the living environment, urbanization, and citizens' recreation belong to these concerns.

Specialists from scientific-research institutes which work in the fields concerned, representatives of design organizations, significant production, and operational units and institutes of the state economic administration took part in working out the projects mentioned above. The resulting project is a synthesis of the results of the team's work. It includes different variants for tuning the ecological conditions of the country with the economic demands of society. Each variant evaluates the possible ecological and economic consequences of the proposed solution, examines the positive and negative elements of the proposed approach in comparison with the other possible alternatives.

The Goal Is Ecological Stability

In the nearly completed first stage of the Ecoprogram, we have finished some projects for ecological systems of management in selected protected land districts. Given this, we do not understand protection as wanting to "conserve" the environment but as "managing the environment thriftily." We gained positive experiences in this during the Trebonsko project. The development of further model lands and the generalization of some of the experiences for the needs of the entire system of large-yield protected lands, which represent 10 percent of the lands in the CSSR, will lead to the establishment of foundations for the ecological stability of the lands of Czechoslovakia.

In the project the Ecological System of Management of the Protected Lands in the Trebonsko District, we worked out on the basis of the initiative of the Botany Institute of the CSAV [Czechoslovak Academy of Sciences] and with the full support of the South Bohemian Regional National Committee, the water resources became the priority problem. With regard to the arising and further deepening deficit in the supply of a series of districts of the South Bohemian Region with potable water, it is essential to preserve the quality of the underground waters at all costs. Of course, this does not mean that we want to cease development of further branches; rather it is a question of their optimal localization and adaptation of production and mining technology to nature.

In the period 1981-1985 in the Ecoprogram, we will be concerned primarily with the districts in which industry power, agriculture, and forestry are developing. In the beginning, for example, we developed the project the Ecological System of Management in the Frydek-Mistek--Beskydy Districts with which we want protectively to prevent the possible negative effects of the developing mining of hard coal in the Frenstatska basin. At present we want to tune the demands connected with the development of industry, agriculture, recreation, and forest and water management. The ecological possibilities of the land are determined also by the perspective of using the land and natural resources. Therefore, the entire protected land of the Beskydy district was also included in the project as a water-management hinterland significant for the livelihood of the Ostravsko-karvinske industry agglomeration. The Beskydske mountains must be preserved also as an irreplaceable recreational area for the mine workers, in the industrial trades, and in other significant organizations.

The projects arose on the basis of the initial demand of the district committee in Frydek-Mistek with the support of the North Bohemian Regional National Committee. Its development is ensured within the framework of the Federal Ministry of Technological and Investment Development together with all the interested parties, by the Czechoslovak Center for the Environment. We are concerned that the developed foundations were influenced in time so that they will serve the preparation of the district plan and the assembling of the plan for developing this district in the 1981-85 period.

In the area of the environment we devote great attention also to international cooperation. The CSSR takes part in many programs for scientific-technical development that are being realized within the framework of the CEMA or the United Nations.

9329
CSO: 5000

IRRIGATION PROJECTS PLANNED TO BENEFIT BANI

Marcos A. Cabral Dam

Santo Domingo EL NACIONAL in Spanish 16 Jan 80 p 15-A

[Text] The Committee to Save Agriculture, with headquarters in Bani, said yesterday that the enlargement of the Marcos A. Cabral canal will only irrigate 160,423 "tareas" [1,007,456.44 ares]]1 "tarea" = 6.28 ares] so it will not be possible to irrigate the 84,000 additional "tareas" [527,520 ares] announced by President Antonio Guzman.

Wilton Guerrero, spokesman for the Committee, said also that Bani agriculture needs 12 cubic meters of water per second but that the Hydraulic Resources Institute [INDRHI] only guarantees 7 cubic meters.

With reference to this point, Eng Leandro Guzman, director of the INDRHI points out that "with 7 meters of water agriculture in Bani will be ruined enough though the president may say the contrary."

On this same subject Guerrero points out that "the president doesn't say a word about the fact that the people of Bani are opposed to the enlargement (of the Marcos A. Cabral canal) because we are sure that it is an unnecessary and illogical project which will squander 64 million pesos."

He also recalls that "the president forgets in his message that he personally offered the people of Bani the construction of the canal of the Northern Area and offered to cancel the plan for enlargement of the Marcus A. Cabral canal."

Also, Guerrero says that "the president is canceling the construction of a public canal which would benefit an additional area of 160,000 "tareas" [1,004,800 ares] and more than 6,000 poor families and instead is ordering the construction of the Platano Maduro dam in La Monteria on Guerra Arroyo to construct a private canal for one family, the Castillo family, the family of the municipal magistrate Eng Vicente Castillo."

Wilton Guerrero asks the people of Bani to unite "in waging a struggle until all the people are served and not just one family."

Platano Maduro, Recodo Dams

Santo Domingo LISTIN DIARIO in Spanish 15 Jan 80 p 3

[Article by Disraelia Guillen Castro: 'Dam Will Irrigate 20,000 "Tareas"']

[Text] La Monteria, Bani--The construction of the Platano Maduro dam will provide the water necessary for the essential irrigation of 20,000 "tareas" [125,600 ares] [1 "tarea" = 6.28 ares] making it possible for hundreds of families to engage in agriculture.

The project which will be carried out in the bed of El Naranjal Arroyo has been ordered by President Antonio Guzman for the purpose of putting more land into production and improving the standard of living of the less privileged families of the municipality.

The El Naranjal Arroyo receives water continuously from springs and from the Bani River so it always has a supply of useable water.

Last Wednesday President Guzman said here that he had ordered the Institute of Hydraulic Resources [INDRHI], whose director, Eng Leandro Guzman, was accompanying him on his trip, to start work on the project immediately.

The inhabitants of La Monteria and the countryside were supporting their families by working on the coffee plantations but as a result of the devastation of the coffee plantations, that is, the destruction of the crop, they now have no place to earn a living.

The president ordered the reestablishment of the potable water service, the reconstruction and new construction of housing, the supply of electric power service, the construction of country roads and the reconstruction of the highway to that community and others. The work on the highway is being carried out; also the work on the dwellings.

INVI [National Institute of Housing] participates in the latter project in coordination with CARE [Cooperative for American Relief to Everywhere] and the Committee for Aid to Bani.

Recodo Dam

President Guzman also ordered the construction of the Recodo dam in the bed of the Bani River.

The construction of this dam will add thousands of "tareas" of land to farm production besides increasing the flow of water in the city's old aqueduct, the water for which comes from the Juan Caballero canal, in the Guera section, fed by the Bani River.

9204
CSO: 5000

TEXACO OIL SPILLAGE IN RIVERS STATE CAUSES CONCERN

Government Statement

Ikeja THE PUNCH in English 9 Feb 80 p 2

[Text] A blow-out which occurred in one of the Texaco oil offshore oil rigs known as North Apoi 20 off the coast of Sangana in Akassa, Balga local government area, is causing the Rivers State government much concern.

In a statement in Port Harcourt this week, the state government claimed that the blow-out occurred as a result of miscalculation of pressure during the drilling operation.

The statement said that for over 18 days since the incident occurred much havoc has been done within a radius of over 35 kilometres by the spread of crude oil polluting all the rivers and creeks in the area thus destroying all marine life.

Government, the statement explained, was very much concerned about the safety of the people and property in the area.

The State government has therefore called on the company concerned about the safety of the people and property in the area.

It added that government regards the blow-out as a major disaster and also calls on the Federal Government to come to the aid of this disaster stricken area.

'DAILY TIMES' Comment

Lagos DAILY TIMES in English 13 Feb 80 p 3

[Editorial: "Oil Spillage and Buck Passing"]

[Text] TEXACO oil company responsible for the recent oil spillage in parts of the Rivers State, is reportedly making some joke of a relief programme by distributing small sums of money and ridiculous quantities of foodstuff to the persons affected.

We are informed that there does not exist in this country any comprehensive environmental law. There are instead bits and pieces of enactments so fragmented that they really bother nobody, very much.

That could well mean that what little TEXACO is now doing, may be more of a humanitarian gesture than meeting any specified legal obligation. The blow-out was an accident. The chance that it might have been prevented with a bit more diligence and care is beside the point just now.

We are concerned with some 30,000 inhabitants virtually displaced from some 100 villages and forced into precarious existence.

Many oil companies, TEXACO included, are wont to argue that because the Federal Government holds majority shares in them, and ostensibly gets the bulk of their profits, hazards like the spillage at Brass and Yenagua should be joint responsibilities weighted more on the side of the Government.

But that is only some good boardroom logic which the public is not obliged to be interested in. The social and legal duties of a company are corporately distinct from those of its individual shareholders.

And in the case under review, different sets of responses are expected from TEXACO and the Federal Government. For all we care, it is TEXACO's business to clear its spillage and it ought to be made to contribute more meaningfully to a restoration of the living comforts of the innocent people.

As a big oil-producing country, it is embarrassing that Nigeria is yet to be reasonably prepared to cope with the polluting effects of exploration and exploitation. One reason we suspect there has been so much foot-dragging in the matter is that it has never been quite clear whether the higher revenue shares which oil states demand should give them primary responsibility for combating pollution.

The nation's environment, we fear, cannot afford such tinkering. There should be firm regulations worked out by the Federal Government spelling out clearly to the oil companies how not to destroy the natural surroundings of their huge network of rigs, wellheads, pipes and tanks and indicating definite liabilities and responsibilities where violations are detected.

On their part, the Federal and State Governments must shape up appropriate machinery for surveillance, and for reacting quickly in case of major disasters.

CSO: 5000

U.S. PLAN TO DUMP WASTE CONDEMNED

Lagos DAILY TIMES in English 14 Feb 80 p 3

[Editorial: "Wastes in Our Backyard"]

[Text] For the second day running, we are forced to draw attention to the problem of environmental degradation; this time we are prompted by a most nauseating report from the United States of America, about plans by a Colorado firm to export hazardous waste to Sierra Leone in return for a payment to that country, of a sum equivalent to 14 million naira.

According to a recent issue of the Washington Post (Jan. 26), officials of the firm approached President Siaka Stevens with the deal which he apparently found difficult to resist. His reaction was described as "one of great interest but also one of mature political caution." A huge mass of stench worth 14 million naira is a killer import. But it would appear Dr. Stevens needs the money at just about any cost, including poisoning his entire population.

Sierra Leone lies along the west Atlantic coast and if as it is most likely, the dumping ground is going to be any point within the country's territorial waters, then perhaps Dr. Stevens hopes to keep the money for himself and have his neighbours share in the flood of mess.

Surprisingly, Nigeria was named by the paper as one of four other nations allegedly studying proposals for this horrible brand of international trade. It had better not be true.

United States authorities are said to be moving fast to stop the cross-national waste disposal plans, because of a possible anti-American backlash.

The State Department is reported to have sent cables to American officials in Sierra Leone warning that the deal between the Colorado firm and the Stevens Government could lead Africans to condemn the United States for "dumping wastes in the blackman's backyard."

Ironically, Washington seems to worry more, albeit rather patronizingly, about the unsightly transaction than Freetown.

It is bad enough politically that one country can condescend as low as being the garbage can of another country for a silly fee.

The more unacceptable element, however, is not simply the vulgar stretch Dr. Stevens may be prepared to give to his financial passions, but his potential disregard for the marine life along a coastal strip that serves several other countries. The Economic Commission of West African States (ECOWAS) has a right and a duty to frown at the Sierra Leone deal and discourage all other prospective negotiators in the sub-region from getting into the toxic affair.

It is palpable nonsense that for all the dollars in the world, West Africa should become a prime target for American waste disposing firms who, we learn, are now facing a crackdown from Federal and state environmental regulators at home.

CSO: 5000

CYCLONE DAMAGE REPORTED, MANY VICTIMS

Tananarive MADAGASCAR-MATIN in French 29 Jan 80 p 6

/ Text 7 Saint Denis de la Reunion (AFP/ANTA): Cyclone "Hyacinth" reached a distance of 60 kilometers off the southern coast of Reunion on Sunday, leaving in its wake, according to a preliminary assessment, 14 victims (7 dead, 7 missing), about 7,500 homeless, over 2,000 houses damaged, and several million francs' worth of damage.

The elements raged from 0830 hours to about 1800 hours. According to the latest weather reports, it would appear that "Hyacinth" is moving away from Reunion, but wind and rain continue to buffet the department and the third storm warning has remained in effect all night. Wind gusts of 150 kilometers per hour have been recorded.

The raging sea broke over the seawalls, flooding the entire coastal area. Whole districts in the port of St Paul and St Benoit were evacuated. The bishop of Reunion had the churches opened to take in the population, as the schools were no longer adequate. The city of St Denis is cut off from the rest of the island, and the only bridge, Pont-Sur-Trois, still permitting contact with the North of Reunion on Sunday morning was threatening to collapse.

Streets Turned into Rivers

Contact with the West has been impossible since Sunday morning, with some roads literally turned into rivers.

The cyclone also severely damaged the electricity and telephone systems, as well as the truck farm crops, which are completely destroyed.

According to the engineering services, the destruction caused by "Hyacinth" to the road system runs somewhere between 30 and 50 million francs. The Ministry of Transport, according to the same source, has already granted an allocation of 2 million francs for emergency repairs.

Storm Warning

The weather improved yesterday morning. Rain, wind, and sea calmed down. The seawater, which had flooded some districts, is gradually retreating. The main objective of the safety and rescue services is to restore traffic on essential routes.

The third storm warning was lifted at 0830 hours yesterday by the regional prefect.

The second warning was left in effect, however, and the population was requested to stay indoors except in unavoidable cases.

Since dawn, helicopters have been on patrol over the region, to inspect the extent of the damage and spot the places needing immediate attention.

The secretary of state for DOM-TOM [Overseas Departments/Overseas Territories] Paul Dijoud, was expected in Reunion around midday.

For his part, Michel Depre, Reunion's RPR [Rally for the Republic] deputy, in a written question to the prime minister, has asked for a special parliamentary session to be set for the end of February, "to consider the emergency measures to be taken for the department of Reunion ravaged by cyclone 'Hyacinth'."

The former prime minister, who has been in Reunion since last 19 January, has also asked Raymond Barre to submit a request for special funding to the EEC.

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CSO: 5000

ASSESSMENT OF CYCLONE DAMAGE REPORTED

Saint Denis TEMOIGNAGES in French 31 Jan 80 p 9

[Article: "A Real Disaster: Planters Need Emergency Aid"]

[Text] The second priority in the memorandum issued by the communist representatives, the first priority being aid to the homeless, is aid to planters: "the communist representatives say that they should be granted aid to compensate them for the losses they have suffered."

That is the condition that would make it possible for planters to resume their work.

In light of the early damage estimates drawn up yesterday by the prefect of Reunion at the special meeting of the General Council, the vital and urgent nature of this aid can be seen.

Geranium Farming Completely Destroyed

The agricultural activity most affected by the cyclone is undoubtedly geranium farming. According to official estimates, the 1980 harvest has been practically destroyed. The growing season is now at its height, and the geranium fields were almost completely destroyed in the space of a few days. The few stalks left standing will be struck by blight. Thus, if geranium essence is to be distilled, almost all the plantations will have to be restarted. That takes money, money that geranium planters no longer have.

That is the fate of 3,000 families--the figure is the prefect's--who have lost everything and who are utterly without resources.

Truck Gardens: 50-100 Percent

Gardens were also hard hit. Some 500 hectares of truck gardens were destroyed almost completely. The wheat harvest was completely wiped out, as were 100 hectares of potatoes.

Tobacco: a Third of the Crop Lost

As far as tobacco is concerned, official estimates put the loss at a third of the crop. As this is the end of the 1979-80 growing season, a large part of the harvest was on the drying racks; it has been lost, as was all that was left standing.

Husbandry: Large Losses

While no estimate can be given yet concerning husbandry, the losses do seem to be large.

No overall estimate is available for cattle, but from some examples given by the General Council members, losses are sizeable judging from the Tampon region alone. A cattle man in the Cafres plain lost 38 head out of 100; another in Tampon lost 20 out of 60, etc.

The prefect also indicated that "sizeable areas of arable land were carried away," and that kilometer after kilometer of access roads--a thousand kilometers by official estimates--have to be rebuilt, as well as the rural roads, which were also severely damaged.

Sugar Cane: Heavy Damage

As for sugar cane, the damage caused by the cyclone is hard to determine at present, but it is nonetheless large. FR 3 announced a production loss of 50 percent. Yesterday afternoon the prefect estimated to the General Council that the losses were between 10 and 30 percent.

However, information in our possession makes it seem likely that the losses will be closer to 30 percent than 10 percent.

Considering the trouble that the sugar industry has had, as well as the difficulties it faces, any loss will hit it very hard, affecting both producers and production.

In the light of these early damage estimates it is understandable that the foremost among these emergencies is to bail out the planters affected as quickly as possible and to give them at the earliest possible date the means of resuming their work.

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CSO: 5000

DROUGHT CUTS MAIZE CROP BY 30 PERCENT

Salisbury THE HERALD in English Mar 80 no page given

[Text] Rhodesia's maize crop could be down by 30 percent this year, following a drought in January, and part of this month, a spokesman for the Commerical Farmers' Union said yesterday.

He said while the recent country-wide rains had alleviated drought conditions in some districts, there were still widespread areas where crops, particularly maize, had suffered irreparable damage.

If maize does not receive rain during a critical pollination period it can be damaged beyond recovery.

In the past few days the CFU has carried out a comprehensive survey of the commercial farming areas. The spokesman said it appeared from the survey that the overall potential yield of the national maize crop could be reduced by 30 percent.

Last August, the Government announced special price incentives for farmers to encourage them to grow maize, because production had dropped to dangerously low levels in previous years.

They responded by increasing hectares by 13 to 18 percent--but the drought has put paid to hopes of a bumper harvest.

Yesterday, the president of the Commercial Farmers' Union, Mr Denis Norman, said in his opinion maize supplies would be tight this year. The crop will be harvested around May/June.

The worst-hit areas appear to stretch over an arc from south-west Mashonaland northwards into large tracts of the Lomagundi region, across to Sipolilo, Centenary East and Mount Darwin, and southwards through Shamva, Glendale and Concession to Mrewa-Mtoko, Headlands, Inyazura and Odzi.

In addition, according to the CFU survey, there are drought pockets south of Salisbury, around Fort Victoria, north and west of Bulawayo, and in the south of Matabeleland.

"Within these areas some of the maize crops have been particularly severely affected," said the CFU spokesman.

"Farmers reporting a 50 percent or more loss of potential yield are in the Chakari, Selous, Gadzema, Mount Darwin, Centenary East, Hoseshoe, Angwa South, Glendale, Concession, Plumtree, Figtree, Gwai, Swanda and Featherstone districts."

The survey indicates that the cotton crop has also suffered in many areas, where there has been significant boll drop from the botton of the plants, but the damage is not as serious as in the maize crop.

Soyabean crops have also suffered in some areas but, for both cotton and soyabeans, final results will depend very much on the rainfall from now to the end of the season.

The CFU spokesman said grazing over the country was generally reasonable, with most cattle reported to be in satisfactory condition.

He said the recent rains appeared to have resulted in improvements in the levels of many dams, but it was clear that considerably more rain was required over much of the country to assure adequate water supplies for the irrigation of the winter wheat and barley crops.

CSO: 5000

RECOMMENDATIONS ON ENVIRONMENTAL EDUCATION

Moscow BYULLETEN' MINISTERSTVA VYSSHEGO I SREDNEGO SPETSIAL'NOGO OBRAZOVANIYA SSSR in Russian No 9, Sep 79 pp 27-36

[Article: "Recommendations of the First All-Union Conference on Education in the Field of the Environment"]

[Text] The conference was held 3-6 July 1979 in Minsk. It was organized by the Section on education in the field of the environment of the Interdepartmental Scientific and Technical Council on Complex Problems of the Protection of the Envirionment and on the Efficient Use of Natural Resources attached to the USSR State Committee for Science and Technology, by the USSR Ministry of Higher and Secondary Special Education, by the (Belorussian SSR) Ministry of Higher and Secondary Special Education, by the USSR Academy of Sciences and by the (Belorussian SSR) Academy of Sciences. Participating in the conference were representatives of the USSR State Committee for Science and Technology, the USSR Ministry of Higher and Secondary Special Education, the USSR Ministry of Education, the USSR Ministry of Culture, the USSR State Committee for Hydrometeorology and Environmental Control, the USSR Ministry of Agriculture, the USSR Ministry of Health, the USSR State Committee for Forestry, the USSR Ministry of Internal Affairs, the USSR Ministry of Justice, organs of state administration of the union republics, the USSR Academy of Sciences, the USSR Academy of Pedagogical Sciences, the All-Union Society "Znaniye," the All-Union Council of Scientific and Technical Societies, republic societies for the protection of nature, and also scientists and specialists from diverse places, 150 people in all.

There were three working sections during the conference: "Higher and secondary special education, the preparation of staff and improvement of the qualifications of specialists"; "Preschool, school and vocational and technical education, improvement of the qualifications of teachers and educators"; "Propaganda for the protection of nature, activities of social organizations, means of public information."

After hearing and discussing the reports and recommendations for the growth of education in the field of the environment, the conference notes that:

The goal of education in the field of the environment (nature preservation education) consists of instilling in people the knowledge and practices of an intelligent relationship with nature, the ability to oversee the means of constructive participation in protecting and improving the environment, and in assuring rational use of natural resources. Under the conditions prevailing in our socialist state there are great possibilities for the development of education in the environmental field.

The legal basis for this lies in the USSR Constitution, legislation in the field of education relating to problems of environmental protection and rational use of natural resources, in the decree of the USSR Supreme Soviet of 20 September 1972 "On Measures for Further Improvement of Environmental Protection and Rational Use of Natural Resources," in decrees of the CPSU Central Committee and the USSR Council of Ministers of 29 December 1972 No 898 "On Strengthening Environmental Protection and Improvement of Utilization of Natural Resources," and of 1 December 1978 No 984 "On Additional Measures for Strengthening Environmental Protection and Improvement of Utilization of Natural Resources." The decree of the CPSU Central Committee "On Further Improvement of Ideological, Political and Educational Work" provides a powerful push for growth of environmental protection education.

In deciding on specific, practical measures one should also take note of the recommendation of the Intergovernmental Conference on Education in the Field of Environment, which was held by UNESCO in cooperation with UNEP in October 1977 in Tbilisi.

With regard to the scientific, technological revolution and the changes in the natural environment which accompany it, it has become abundantly clear that it is now necessary to explain the goals of the protection of the environment to the general public as a complex, interdisciplinary problem. Subjects relating to this problem should be included in textbooks at various levels of education. There should be improvement of the skills and training of specialists and workers who, in the course of their specific, practical, administrative or scientific work, could apply their acquired knowledge and methods in the interests of rational use of natural resources and their preservation and renewal.

Education in the field of the environment is intended to make people aware of their responsibility for the state of the environment and to stimulate initiative in solving environmental problems.

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Considering that further growth of education in the environmental protection field (education for protection of nature) is possible only with substantial increase of activity in this field by the appropriate ministries, state committees, departments, educational institutions, scientific institutions, and social organizations, the conference recommends:

To the Ministry of Education of the USSR

1. To provide:

--continuing presentations of environmental protection subject matter in standard scholastic programs for general education schools. Pay special attention to explaining the ideological aspect of this problem in courses in the social-historical and humanitarian series;

--obligatory participation in work by all pupils of grades 4-10 for planning and upkeep of the school building area and the area immediately surrounding the school (parks, squares, vacant places), and also the systematic care of them. In this connection assign special study time in programs for artistic instruction and geography, and also increase the number of hours in programs for work instruction and biology for carrying out study assignments for the study, protection and improvement of the environment in the microregion of the school.

2. Prepare orderly instructions for the improvement of class assignments, in the process of which mastery of knowledge of the environment is organically combined with work habits of pupils for its protection and improvement.

3. After realization of the organizational and practical preparation of teaching curricula and the creation in schools of small land reserves, provide the possibility of setting aside one excursion day per year in the teaching plan for grades 4-10 so that the obligatory assignments in nature can be carried out according to the special program.

4. Provide for preparation in 1980-1981 of publication, by "Enlightenment" publishers, of textbooks and methods handbooks, books of problems, anthologies, and also graphic educational materials which deal with current environmental protection problems.

5. Develop an intersubject program of environmental protection instruction for secondary school students, which includes environmental protection problems in all subjects.

6. Study the possibility of introducing the integrated course "Man and Nature" into the senior classes.

7. Develop programs and teaching manuals for optional courses in the advanced study of environmental protection problems for grades 7-10.

8. Introduce into the teaching plans of all departments of pedagogical institutes the required course "The Protection of Nature" with an

explanation of methods of environmental protection education included. To supplement the lectures in this course provide for seminar assignments (in all departments, in methods of environment protection education in agreement with the profile of the specialty being acquired.

9. Provide for obligatory period of practical experience of students in the specialties of biology and geography during the summer semester at pioneer and work camps, construction detachments, production brigades, and forest ranges which include environmental protection experience.

To the Ministries of Education of the Union Republics

10. Intensify the attention paid to educational methods for instructing preschoolers in careful treatment of their natural surroundings in the system of preparation of instructors or preschool institutions.

11. Charge departments of public education with:

--expanding the relations between urban and rural schools in organizing practical activities of students for protection, care of and improvement of their natural surroundings, especially in work and rest camps, school forests, and in pupils' brigades, etc;

--together with organizations of society for environmental protection select, and in cooperation with local soviets of people's deputies, assign to the school (or to a group of schools) natural territories for organizing special instructional itineraries and reserves for the purpose of having the pupils study their natural surroundings and spreading ideas of environmental protection among the citizens;

--develop and manage, through the efforts of rayon methodological societies of teachers for collaboration with institutes for the improvement of teachers and with the appropriate specialists, teaching itineraries in nature in the assigned territory;

--organize the systematic preparation of teachers for coordinated, comprehensive nature field trips.

12. Expand environmental protection subjects in their content of different forms of socially useful labor and out-of-class assignments for pupils (clubs, trips, scientific conferences and meetings, popular campaigns, etc).

13. More widely practice the preparation of course and degree projects related to problems of environmental protection education of pupils at all departments of pedagogical institutes.

14. Entrust planning organizations with providing for the creation of the necessary conditions for the organization of children's work activity

(nature room, garden, flower bed, forest section, fields, place for storing children's tools for taking care of their natural surroundings, etc) during the planning for construction and site selection of preschool buildings.

15. Provide organization of short-term courses on problems of environmental protection education within the system of increasing the skills of pedagogical staff for school principals, teachers, preschool instructors, and organizers of pioneer and Komsomol work.

16. In the 1979-1981 period organize, together with the ministries of higher and secondary special education of the union republics, regional training and methods centers for improving the skills of teachers and other workers in public education field in the area of environmental protection education wherever there is positive experience in the work of scientific and pedagogical teams in this area.

To the USSR Ministry of Education; To the Ministries of Education of the Union Republics; To the All-Union Lenin Young Communist League Central Committee; to the Central Councils of Republic Societies for the Protection of Nature

17. Organize an annual environmental day in schools. Arrange student led exhibitions, conferences, meetings and other public campaigns for propaganda of knowledge of the environment and its protection to occur on this same day.

18. Provide for systematic work with pupils in pioneer camps to instill in them a responsible relationship with nature. For this purpose:

--develop methods manuals for work with pupils in pioneer camps;

--include problems of environmental protection education in the program of preparation of Young Pioneer Leaders, instructors and directors of pioneer camps;

--provide the position of naturalist-biologist (geographer) in the regular staff list of pioneer camps.

To the USSR State Committee for Vocational and Technical Education

19. Adopt measures for extensive acquaintance of students of vocational and technical schools and technical institutes with the environment and with various aspects of its protection in assignments of courses in the vocational and technical and general educational series; increase the practical activities of students in the protection of nature in the system of extra-classroom and extra-mural assignments.

20. Make adjustments in on-going programs for preparation of skilled workers in maintenance of vehicles, apparata, and equipment which produces harmful emissions into the environment, and also workers in agriculture and forestry in order to increase the attention paid to the study of problems of protection of nature.

21. Take note of and realize measures to increase the knowledge of engineering educators of vocational and technical schools and technical institutes in the area of environmental protection.

22. Develop methodological recommendations for engineering educators in environmental protection education of students in the process of studying special disciplines and general educational subjects for the All-Union Scientific and Methodological Center of Vocational and Technical Instruction of Youth (VNMTS) attached to the State Administration for Vocational Education of the Population of the USSR.

To the USSR Ministry of Higher and Secondary Special Education

23. More attentively monitor fulfillment by the higher and secondary special educational institutions of the order of the USSR Ministry of Higher Educational Institutions of 11 April 1979 No 457, by which measures have been taken for improving the instructional process and scientific investigations in the area of education for problems of the environment, which issue from the decree of the CPSU Central Committee and the USSR Council of Ministers of 1 December 1978 No 984 "On Additional Measures for Strengthening Protection of Nature and Improvement of Utilization of Natural Resources."

24. Beginning with the 1980/81 academic year establish a system of continuous preparation in the field of the environment for all higher and secondary special educational institutions by means of combining the study of general problems of protection of nature and specific problems of the rational utilization, reproduction and preservation of natural resources and protection of the environment, for which there is the general course "Protection of Nature" ("Protection of the Environment"):

--include in educational programs of general educational and special disciplines problems relating to the problem of the interaction of society and nature, which cover specific sources and factors of harm to the environment on the part of various branches of the national economy and measures directed at elimination and reduction of the negative influence of economic activity on the environment;

--provide for inclusion in course and degree work (projects) of special sections, which are devoted to evaluating the effect of existing and planned industries and other economic enterprises on the environment and on man, and also which provide for preparation of recommendations for the rational utilization, production and preservation of natural resources;

--expand the study of problems of the scientific use of nature in departments of social vocations and the organization of sections within these departments for the preparation of instructors and social inspectors for protection of nature;

--encourage the participation of students of higher educational institutions and secondary special educational institutions in scientific practical and social activities for protection of the environment (clubs, detachments, weeks, days, evenings of the protection of nature, etc).

25. In order to better study the problems of protection of the natural environment both in the generalized course and in other educational disciplines, make sure that in each higher and secondary special educational institution instruction is conducted on the basis of interdepartmental (intersubject) standard programs, which are compiled with consideration of the nature of the specialists being trained.

26. Develop a system of measures for developing the preparation of staffs of specialists in the area of environmental protection, and also in retraining and improvement of the skills of specialists by 1 July 1980 in cooperation with the Section for Education in the field of the environment of MNTS attached to GKNT and with consideration of the recommendations of the Councils of Ministers of the union republics, of ministries, of state committees and institutions; examine the question of the inclusion of environmental protection specialties in the list of specialties from which personnel are prepared for various branches of the national economy; examine recommendations for opening up specialties related to problems of environmental protection and rational utilization of natural resources.

To the USSR Ministry of Higher and Secondary Special Education; to the USSR Ministry of Education

27. Hold regularly, with participation of the Section on Education in the field of the environment of MNTS attached to GKNT, regional scientific and methodological conferences with teachers of the general course "Protection of Nature" ("Protection of the Environment") of higher educational institutions and secondary special educational institutions for the purpose of exchanging ideas and acquainting one another with the newest achievements in the field of the theory and practice of the protection of nature and the rational utilization of natural resources; encourage teachers at higher educational institutions who are giving courses on problems of environmental protection to be trained in special departments for preparation of staff according to modern promising directions of science and technology.

28. Include lectures on problems of the protection of nature in the teaching plans of departments whose purpose is to improve the skills of the staff of higher and secondary special educational institutions.

29. Examine the problem of organization of on-going inspections of the problems of education in the field of the environment.

To the USSR Ministry of Higher and Secondary Special Education; To the USSR Ministry of Education; To other Ministries and Institutions which have higher and secondary special educational institutions

30. Exert efforts (invite authors) for the preparation of textbooks, and also teaching and methods manuals (including educational tables) for environmental protection subjects, which have been adapted to the natures of various educational institutions and which meet modern practical requirements of protection of nature and theoretical premises.

To the USSR State Committee for Matters of Publishing, Printing and the Book Trade; To the State Committees of Union Republics for Matters of Publishing, Printing and the Book Trade; To All-Union, union-republic and republic ministries and institutions

31. Include the publication of textbooks, methods manuals, industrial and technical, and popular scientific works on problems of the protection of nature and the rational utilization of natural resources in current and projected plans of editions. Invite the Section on Education in the field of environmental protection of MNTS attached to GKNT to prepare conclusions of their prospects.

To the USSR State Committee on Cinematography; To the USSR Ministry of Higher and Secondary Special Education; To the USSR Ministry of Education; To the State Committee of the USSR for Occupational and Technical Education

32. Increase the production of educational short-length films on protection of nature, rational utilization of natural resources and protection of the environment.

To Councils of Ministers of the Union Republics; To All-Union and union-republic ministries and institutions

33. Speed up compilation of the lists of responsibilities which must be fulfilled by specialists with higher and secondary special education in protection of nature and rational utilization of natural resources. On the basis of these lists determine the need for specialists for the period up to 1990 and present the appropriate requests to the USSR Gosplan and the Ministry of Higher Educational Institutions of the USSR.

To USSR Gosplan

34. In the plan of economic and social development of the USSR provide for preparation of specialists with higher and secondary special education

in protection of nature and rational utilization of natural resources in conformity with requests for them from ministries, state committees and institutions of the USSR and Councils of Ministers of the union republics.

To the USSR Gosplan; To the USSR Ministry of Higher and Secondary Special Education

35. Find out the need by branches of the national economy for specialists in the comprehensive protection of nature for the long term and determine the principal institutes for their preparation.

To the All-Union, union-republic and republic ministries and institutions

36. Examine the question of expanding the nature protection subject matter in teaching plans of institutes for improving the skills of workers of ministries and institutions, industrial enterprises, construction and agricultural organizations, municipal facilities, organs of health protection and culture, with a view to enrolling all specialists in the course "Protection of Nature" ("Protection of the Environment"), which illuminates occupational problems and technological processes of production.

37. Organize execution of target programs for improving the skills of workers which are related to problems of the preservation, renewal and rational utilization of natural resources.

38. Include subject matter of the rational utilization of nature and protection of the environment with consideration of specific industrial problems in the programs of factory schools for technical training.

39. Hold examinations to test for minimum technical knowledge on the principles of utilization of nature in specific branches of the national economy.

To the Academy of Social Sciences attached to the CPSU Central Committee; To the Higher Party Schools

40. Include instruction in problems of protection of the natural environment in their instructional plans.

To the USSR Academy of Sciences; To the Branch Academies; To the Academies of Sciences of the union republics

41. Include natural environment protection subjects in the work plans of methodological seminars and courses for improving the skills of scientific and scientific and technical workers.

42. Broaden the preparation of scientists by special purpose post-graduate programs.

To the USSR State Committee for Standards; To the Section on Education in the Field of the Environment; To the MNTS attached to BKNT; To the USSR Academy of Sciences

43. Carry out projects for improving standardization and unification of scientific and technical terminology in the field of protection of the natural environment and for preparation of terminological, encyclopoedic handbooks for publication.

To the USSR Ministry of Education; To the Ministries of Education of the union republics

44. Take measures to strengthen scientific investigations along the following lines:

--elaboration of the psychological and pedagogical principles for improving educational programs, textbooks, and educational-methods handbooks so that they reflect the problems of the protection of the environment at various levels of education;

--elucidation of the conditions and principles of interdisciplinary integration and coordination of education and propaganda in relation to problems of protection of the environment in the process of instruction in educational institutions at various levels;

--study of the psychological principles of the formation of convictions in students of different ages of the need to relate responsibly to the environment and the utilization of natural resources;

--development of recommendations as to the content of education, its organizational forms and methods, which are directed toward the development of initiative in students in the study, protection and improvement of natural conditions and in the rational utilization of natural resources.

To the USSR Ministry of Culture; To the Ministries of Culture of the union republics

45. Expand investigations for developing the scientific bases of propaganda of nature protection knowledge through museums, libraries, clubs, cultural gardens and recreation spots.

To the USSR State Committee for Science and Technology

46. Take up the question of including the nomenclature of the specialties of scientific colleagues of the supplementary specialty "The Rational Utilization of Natural Resources and Protection of Nature" in the divisions of "Biological Sciences," "Technical Sciences," "Chemical Sciences," "Historical Sciences," "Geological Sciences," "Agricultural Sciences,"

"Pedagogical Sciences," and "Philosophical Sciences" (similarly to the way it was done in the division "Geographical Sciences"). The purpose of this would be to help defend theses in this specialty in the competition for Candidate and Doctoral degrees.

To the Highest Certifying Commission attached to the USSR Council of Ministers

47. Consider the question of creating specialized councils for the defense of dissertations in the field of complex problems of protection of nature.

To the USSR State Committee on Matters of Publishing, Printing and the Book Trade; To the State Committees on Matters of Publishing, Printing and the Book Trade of union republics

48. Promote the publication of:

--textbooks and educational manuals on the protection of nature and the rational utilization of natural resources for higher and secondary special educational institutions, general education schools and vocational and technical institutes; scientific and methods materials on problems of education and propaganda in the field of the environment, and also minature forms of the propaganda of the ideas of protection of nature (pocket calendars, postcards, bookmarks, et al);

--literature on protection of the environment by the publishing houses "Prosveshcheniye," "Vysshaya shkola," "Nauka," "Mysl'," "Kolos," "Lesnaya promyshlennost'," "Gidrometeoizdat," "Stroyizdat," and other institutional publishing houses (educational manuals for higher educational institutions, technical institutes and courses for improving the skills of specialists, for workers in popular occupations, manual laborers, team leaders, foremen, etc; instructions on the use of measures in the field of environmental protection during actual production, reviews of the positive experience of specific projects, etc);

--the texts of lectures on methods materials and visual aids on problems of the protection of nature by the publishing house "Znaniye";

--materials on legal problems of the protection of nature and rational utilization of natural resources by the publishing house "Yuridicheskaya literatura";

--teaching tables and other visual aids, which have been compiled on the basis of modern concepts and actual statistics on the interactions of nature and society, by the publishing house "Plakat";

--teaching manuals for students of national universities with an emphasis on local and occupational tendency of these manuals, other educational and also methods materials at local publishing houses;

--books on the protection of nature for youth at the publishing house "Molodaya gvardiya";

--booklets and drawings, which promote a love for and careful approach to nature by children at the publishing house "Detgiz."

49. Render the necessary aid to societies for the protection of nature in the publishing of literature on the problems of protection of the environment and rational utilization of natural resources.

To the USSR State Committee on Science and Technology; To the USSR Academy of Sciences

50. Encourage the systematic publication, through VINITI [All-Union Institute of Scientific and Technical Information], of bibliographical indexes, reviews and other materials which disseminate Soviet and foreign experience in conducting scientific and practical projects in the field of protection of the environment and rational utilization of natural resources.

To All-Union, union-republic and republic ministries and institutions

51. Oblige their information offices to systematically publish abstract collections and reviews, which will disseminate the most advanced knowledge of Soviet and foreign projects in the field of protection of the environment and the rational utilization of natural resources.

To the USSR State Committee for Hydrometeorology and Environmental Control

52. Include the column "Education in the field of the environment" in the journal "Nature and Man" for presenting the experience, forms and methods of nature protection education in the USSR and abroad.

To the USSR State Committee for Television and Radio

53. Include the transmission "Man and Nature" in the program of the Central Television, in which special attention is devoted to showing progress of projects in protection of nature, to illuminating the activities of the International Program of UNESCO and UNEP on education in the field of the environment, the UNESCO program "Man and the Biosphere," and programs of the cooperation of CEMA member countries.

54. Encourage the inclusion in station programs shows on the republic, kray and oblast radio and television broadcasting of listener's magazines on nature protection themes and the development of social editorials on the protection of nature.

To the Ministries and Institutions, which have reserves and other especially preserved territories

55. Organize public information centers for the protection and rational utilization of the natural resources of respective regions at forest reserve, national nature parks and other especially preserved outdoor sites; carry on educational courses and seminars at them for teachers and specialists who are engaged in the preservation and exploitation of natural resources, and workers of local Soviet and party organs; create on the periphery of reservations and within the limits of their buffer zones educational paths, on which course students, seminar participants, and also pupils and tourists are acquainted with the natural features of the reservation and its surroundings, and with the forms and methods of its utilization.

56. Create museums (exhibits) at all preserves, in which not only the specific problems of the preserve are reflected and its natural outstanding features are indicated, but the general principles of protection of nature in the USSR, the functional relations and phenomena in the natural and changing human environment are also revealed.

57. Urge officials of the preserves and national parks to expand their lecture programs among the local population and at people's universities, speak on radio, television and in the local press, develop systematic and informational manuals on problems of education in the field of protection and rational utilization of natural resources, and give lessons at higher and secondary special education institutions.

To the USSR Ministry of Culture; To the Ministries of Culture of the union republics

58. Systematically improve the forms and methods of education in the field of the environment by means of scientific and cultural-informational institutions (libraries, clubs, museums, theaters, and recreation parks).

59. Pay particular attention to informational work in the field of protection of nature not only among students, but also among other categories of the population.

60. Show the problems of the interaction of man and the environment in the composition of permanent expositions and exhibits at museums of all kinds.

61. Widely introduce nature protection themes into the system of public activities of clubs, recreation parks, and libraries.

To the All-Union Central Council of Trade Unions; To the Central Committee of the All-Union Lenin Young Communist League; To the Central Council of the All-Union Lenin Pioneer Organization

62. Expand work in education in the field of protection of nature.

To Editorial Boards of Elements of the Press

63. Increase the systematic publication of materials on protection of nature in the periodical press.

64. Create public editorial staffs for protection of nature on all periodical publications; include on the editorial board of central, republic, kray and oblast newspapers a specialist who will be concerned with selection of materials on protection of nature for the purpose of their subsequent publication; encourage local newspaper correspondents to become interested in nature protection problems and systematically write about them, describing, above all, the positive results of projects.

65. Publish in each issue of popular, scientific and technical, scientific-informational, and scientific journals articles and selections of materials on protection of nature, taking into account the nature of the journal.

To the All-Union Society "Knowledge"; To "Knowledge" Societies of the union republics; To Scientific-Technical and Scientific Societies

66. Take steps toward further expansion and improvement of the ideological and occupational level of lecture propaganda, toward broad dissemination of advanced experience, and also toward intensifying the publishing activity on problems of protection of the environment and rational utilization of natural resources.

To Societies for Protection of Nature of the union republics

67. Intensify propaganda of problems of protection of the environment and rational utilization of natural resources, and for this purpose, in particular:

--expand the network of national universities (departments) on the protection of nature; organize them in each administrative rayon, and also in educational institutions, at large enterprises, construction projects, and on sovkhozes and kolkhozes;

--have in all union-republic, autonomous-republic, kray and oblast centers, and also in other large cities a House of Nature, where there is a lecture staff and a library; hold exhibitions, theme meetings, movies, creative meetings of persons engaged in protection of nature with scientists, specialists of various branches of the national economy, writers, journalists, and also with artists and other cultural workers;

--hold rayon, city, oblast, kray, autonomous- and union-republic exhibits for popularizing the latest knowledge on protection of nature of industrial enterprises, construction projects, kolkhozes, sovkhozes, educational institutions and organizations;

--improve visual propaganda; expand the output of posters, booklets, leaflets, and flyers with messages for particular categories of the population, and also with information on community work in protection of nature;

--create teaching classes at popular recreation sites together with tourist organizations and lay out theme routes and educational paths;

--improve the system for preparation of highly skilled propaganda personnel (seminar leaders, teachers at national universities, readers), who are stationed at Houses of Nature, Houses of Knowledge, Houses of Technology and educational institutions, at which effective courses are constantly being given;

--strengthen the contacts of societies with party and soviet organs, broaden the relations with scientific and cultural-informational institutions, educational institutions, with the society "Znaniye," with scientific- technical and scientific societies, with creative unions of workers in literature and art, with the Union of Journalists, and with organs of popular information and propaganda;

--establish reciprocal business contacts between societies for the protection of nature of the various union republics, organize exchanges of experiences and delegations, hold joint conferences, meetings, seminars and other events.

To the Voluntary DOSAAF Society for Cooperation with the Army, Air Force and Navy

68. Include in the list of required expertise of drivers of all categories and of other transport directors information on the prevention of harm to the environment by these transport means.

To the USSR Ministry of Justice

69. Take steps to prepare a normative-legal act on nature protection education in the USSR, and also for inclusion of the assumptions of this education in normative acts which are currently in force and ones which are being elaborated.

II

70. Attaching great importance to coordination of measures for education in the field of the environment, which are being conducted and noted by various ministries, state committees, institutions and social organizations, the conference supports the basic directions of the work of its section on education in the field of the environment which have been sanctioned by the Interdepartmental Scientific-Technical Council on Complex Problems of Protection of the Natural Environment and on Rational Utilization of Natural Resources attached to the GKNT:

--coordination of projects in the field of education on problems of protection of the environment between ministries, state committees, departments and social organizations, and also coordination of plans of scientific investigations in this field;

--development of the principal directions of activity for improvement of the system of education and propaganda in the field of the environment with participation of ministries, state committees, departments of the USSR and social organizations;

--gathering, analysis and generalization from data on the condition of education in the field of the environment in the USSR and abroad with a view to preparation of recommendations for the improvement of this education at its different levels using these data;

--consultations during preparation of educational manuals, scientific-methods and informational materials on education in the field of the environment for publication;

--examination of draft plans and reports of activity for education in the field of the environment of ministries, state committees, departments and social organizations;

--preparation of recommendations on problems of the participation of the Soviet Union in international programs on education in the field of the environment in the interests of the growth of this activity in the USSR and for the purposes of strengthening the influence of the socialist countries on the content and direction of such programs.

III

Nothing that in order to improve education in the field of the environment the establishment and development of contacts with the appropriate organizations and specialists of different countries and the constructive participation of the Soviet side in projects of the International Program of UNESCO-UNEP for education in the field of the environment are of great importance, the conference proposes:

To the USSR Commission for UNESCO Matters

71. Send information on activities of the USSR on education in the field of the environment to the UNESCO Secretariat; inform the interested ministries, state committees, departments and social organizations of the USSR on the plans and results of international measures being taken in this field; send to the Section on education in the Field of the Environment of MNTS attached to GKNT materials from UNESCO, which might be of practical and theoretical interest for Soviet scientists, educators and other specialists involved in nature protection education.

To the USSR Commission for UNEP Matters

72. Widely disseminate data on UNEP activities for the purpose of encouraging their utilization in the USSR as handbook materials on education in the field of the environment.

73. Inform the appropriate organizations of the results of realization of the recommendations of this conference.

To the USSR Commission for UNESCO Matters; To the USSR Commission for UNEP Matters; To other organs related to the activities of international organizations

74. Recommend Soviet specialists and scientists for work being done by international organizations on the preparation of textbooks, dictionaries, and other educational and scientific materials on problems of protection of the environment.

To the Committee of CEMA on Scientific and Technical Cooperation

75. Encourage further expansion of cooperation of CEMA member countries on problems of education in the field of protection of the environment.

76. Recommend to the USSR representative to make a proposal on the joint development by CEMA member countries of coordinated measures for improving education in the field of protection of the environment at higher and secondary special educational institutions at the next Conference of Ministers of Higher Education of the Socialist Countries (Bulgarian People's Republic, 1980).

77. Suggest to the USSR representative at the Conference of Directors of Organs of Vocational Education of CEMA member countries to bring the attention of the Conference to the need for regular examination of problems of improvement of education in the field of environmental protection at vocational and technical schools of the socialist countries.

To the All-Union Lenin Young Communist League Central Committee; To the Central Council of the All-Union Lenin Pioneer Organization

78. Increase the participation of Soviet youth in the international youth movement for protection of the environment; propagandize the results of work with youth in the Soviet Union; assure the distribution of materials and recommendations developed at international youth conferences and meetings on protection of the environment in the USSR.

To the USSR Ministry of Agriculture

79. Render the necessary assistance in the work of the Eastern-European Committee of the ICPN [International Commission on the Protection of Nature] Commission on Education.

To the USSR State Committee on Cinematography

80. Increase the participation of the Soviet Union in the Czechoslovakian International Film Festival "Ekofil'm" which is conducted yearly; take the necessary steps for organizing the showing of the best foreign films devoted to protection of the environment in the USSR.

IV

81. In assigning great attention to encouragement of particularly outstanding achievement in the field of protection of the environment, the conference asks the presidiums of the supreme soviets of the union republics to establish the honorable title "Honored Worker for the Protection of Nature" based on the example of the Supreme Soviet of Lithuanian SSR.

82. The Conference requests of the Section on Education in the Field of the Environment of MNTS attached to GKNT to send recommendations of the conference to the ministries, state committees and departments of the USSR, to the Councils of Ministers of the union republics and social organizations, to which the Sections on measures taken to realize these recommendations must be reported before 1 January 1980.

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GROWTH OF SOCIALISM AND OPTIMIZATION OF COOPERATION BETWEEN MAN AND NATURE

Kiev POD ZNAMENEM LENINIZMA in Russian 24 Dec 79 pp 33-52

[Sections 4 and 5 of training aid: "Developed Socialism: Problems of Theory and Practice," prepared for press by Izdatel'stvo Politicheskoy Literatury in abridged form. Preceding sections appear in Nos 16, 17 and [illegible] 23 of this journal for 1979]

[Text] Section 4: DEVELOPED SOCIALISM AND PROBLEMS OF OPTIMIZING INTERACTION BETWEEN SOCIETY AND NATURE

The future development of the economy of mature socialism depends largely on the level of supply of natural resources for the national economy. The constantly growing scale of application of technical devices, the utilization of natural material in the process of public production (and at the same time increased discharges of various kinds of wastes into the environment), and the peculiarities of the utilization of natural resources during the period of the scientific and technical revolution determine the timeliness of the problem of consumption and protection of resources and, more broadly, the problem of the interaction between society and nature, which manifests itself in different ways, the more so since it is being resolved under conditions created by opposing socio-economic systems.

When developing successfully socialism optimizes the social relations inherent in it and reveals their systemic and integral nature, thereby demonstrating their advantages over capitalism in all spheres of the society's vital activity, including the ecological sphere, that is, the interaction between man and the earth's nature which has nurtured and is nourishing him.

1. A New Type of Interaction Between Society and Nature

Since the time society first appeared man has related to nature not directly, but mainly through other people--through social ties. The nature and type of interaction between man and the surrounding world depend on the nature, type and quality of these ties: in various societies carry out in various ways the "exchange of substances with nature," to use Marx's phrase. The objectively conditioned progress of human society has necessarily led it to a point, to a level of social maturity at which it has become possible for people to arrange their interactions with nature scientifically, prudently, and to interact with nature conscientiously and responsibly.

Under socialism there are also many unsolved problems regarding the utilization of nature, but the essential social factors that cause inefficient utilization of natural wealth and destruction of the environment are being eliminated. Public ownership of the means of production and the land, the minerals, water and forests, the animal and vegetable world, creates principal prequisites for an intelligent attitude toward natural resources and their protection.

Above all, control of the process of production and inspection of the condition of natural resources and the living environment as a whole under the conditions of socialism are concentrated in a single place--in the hands of public power. Neither can one fail to take into account the large amount of attention that is given to organizing the utilization of nature by the humanistic character of socialist public goals which are expressed in the slogan "All in the name of man, all for the good of man." This slogan has universal significance. In the name of man and for his well-being, a socialist society protects and restores nature and preserves its beauty. The many-sided connections between man's health, his mood and his ability to work, on the one hand, and the condition of the environment, on the other, that is, the significance of nature as a source of satisfaction of human spiritual needs and as an important factor in human well-being is constantly at the center of the attention of a socialist state.

The attainment of the highest goal of socialism--to improve the material and spiritual life of the people and to form a man who is well developed in all ways--presupposes a high degree of development of society's relationship to nature. Socialism is the basis not only of new relations among humans, but of new human relations to the material environment of life, relations which are realized in practice in the form of planned and comprehensive utilization of nature by all of society and in the interests of all of society.

The activity of the socialist state for the protection of nature and socialist utilization of nature as a whole are the implementation of Lenin's ideas concerning a thrifty, economical attitude toward nature's wealth. Even in the most difficult periods of the struggle for Soviet power, V. I. Lenin devoted constant attention to this problem.

Among almost 100 documents concerning the protection of nature or the utilization of nature which were personally signed by Lenin during the time he held the post of chairman of the Council of People's Commissars, a special role was played by the "Draft of the Plan for Scientific and Technical Work." It set for the first time on a statewide scale the task of broad and immediate study of the country's national wealth, which created the necessary prerequisites for bringing order into the utilization of nature.

The new way of utilizing nature was immediately arranged taking into account the problems of protecting the health of the population and suggested "taking broad decisive sanitary measures in the interests of the workers, namely: a) making populated places more healthful (protection of the soil, water and air) . . ." (V. I. Lenin, Poln. Sobr. Soch. [Collected Works], Vol 38, p 45). This line is being consistently and purposively followed in the ecological policy of the CPSU. The CPSU program stipulates that "a great deal of attention will be devoted to the protection and efficient utilization of forests, water and other natural riches, to their restoration and proliferation."

Even in the first years of the construction of socialism, despite the difficult consequences under destructive conditions, extremely important preserves were created on the territory of our country, the first attempts were made at comprehensive assimilation of natural wealth, and the bases were laid for protection and restoration of rare kinds of animals. Such valuable kinds of animals as elk, sable, otter, forest marten and others, which were on the verge of extinction, as a result of the ecological policy of the socialist state, were restored to an industrial level. It was during these years that the basis was laid for the assimilation of new territories, and the mining industry and hydrolic construction developed rapidly.

The work for improving the utilization of nature became especially active in the USSR during the 1960's and the first part of the 1970's, that is, in the stage of developed socialism. It was precisely during this period that final form was given to the unionwide system for protection of nature and its legal and organizational mechanisms were formed. Plans for the protection of nature have been an indispensable part of all economic and social programs since 1974, which was a large step on the path toward complete integration of the protection of nature into the overall process of economic activity.

A program for further harmonization of the utilization of nature was formulated in the decisions of the 24th and 25th CPSU Congresses. "While taking measures for acceleration of scientific and technical progress," said L. I. Brezhnev at the 24th Party Congress, "it is necessary to everything so it is combined with an economical attitude toward national relations and does not serve as a source of dangerous pollution of the air and water and of exhaustion of the land. The party is increasing the demands it makes on planning and economic agencies and design organizations, on all of our personnel, for the matter of planning and constructing new enterprises and improving the operation of existing ones with an eye to protecting nature. Not only we, but also subsequent generations must have a chance to use all of the riches that are given to us by the beautiful nature of our homeland" (Materialy XXIV s'yezda KPSS [Materials of the 24th CPSU Congress] pp 57-58).

The instructions of the Congress lay at the basis of the fourth session of the 8th Convention of the USSR Supreme Soviet held in September 1972 and later, of the decree of the CPSU Central Committee and the USSR Council of Ministers of 29 December 1972, "On Stepping up the Protection of Nature and Improving the Utilization of Natural Resources."

This line was further developed at the 25th CPSU Congress. ". . . It is possible to utilize nature in various ways. It is possible--and the history of mankind knows many examples of this--to leave alone the fruitless, lifeless expanses that are hostile to man. But it is also possible and necessary . . . to enrich nature, to help nature to reveal her vital forces more fully There is a simple expression that is known to everyone--'the flourishing region.' This is what they land where buildings, the experience of people, their affection and their love of nature truly create miracles. This," emphasized L. I. Brezhnev, "is our socialist way." (Materialy XXIV s'yezda KPSS, p 53).

The consistency of the party's course of action in this most important sphere is manifest in the fact that the development and implementation of measures for protection of the environment and for efficient utilization and reproduction of natural resources in the Soviet Union are included among the main national economic tasks. The 25th CPSU Congress earmarked a broad program of measures for the protection of nature and improvement of the utilization of nature. The Congress emphasized the special role of agriculture as a constantly acting mechanism for the protection and restoration of natural wealth in the process of harmonization of the interaction between society and nature. One can not simply take a permanent gift from nature; one must also protect and enrich it--this is the essential principle of socialist utilization of nature.

The decisions of the 24th and 25th Party Congresses essentially outlined a strategy for socialist utilization of nature in the modern stage. This is not the strategy of "survival" on which bourgeois studies of the future are based, not a strategy of "conservation," but a strategy of flourishing on the basis of scientific, balanced and comprehensive assimilation and reproduction of natural wealth, on the basis of coordinated actions of the forces of society and the forces of nature, from which both humans and nature gain. Only on this path can one find the solutions to ecological problems that are causing so much uneasiness throughout the world today.

Socialist utilization of nature is not simply a certain ecological policy that is expressed in decrees, laws and instructions, but, above all, a practice that is implemented in keeping with it, the realization of developed norms and recommendations.

The work for reducing the negative effects of industrial production on the environment which is being done in the USSR is not without precedent. The Soviet state is not unwilling to close, transfer or completely eliminate enterprises that violate the favorable conditions for human life. Thus in a short period of time in Moscow alone more than 700 enterprises and shops were either moved outside the city or reconstructed in keeping with ecological considerations. The Soviet Union has forbidden the startup of new enterprises without complete readiness of purification installations; and the same policy applies to facilities that are being reconstructed. Our country, for the first time in world practice, has established maximum permissable concentrations for more than 140 harmful substances in the atmosphere, for 487 in bodies of water, and for dozens of combinations of them. These norms are the most rigid in the world.

An immense amount of attention is being devoted to the task of comprehensive utilization of raw material and fuel. Thus Soviet scientists have developed a progressive method of obtaining nitric acid from the smoke of nitric acid industries. We have solved the problem of gathering sulphur anhydride and now about 30 percent of the sulphuric acid produced in the country is obtained from waste gases which were previously discharged into the atmosphere.

Broad research has been initiated in the area of water recycling. Even today many enterprises, especially petrochemical and petroleum processing enterprises, have recycled water supply systems. Under these conditions purification installations acquire a new function--instead of sanitary treatment of the water, they make it ready for production.

Not a single country in the world plants forests on such a scale as in the USSR. Areas of state forest plantations and where forests are being planted occupy about 1.3 million hectares annually in our country.

Under the conditions of developed socialism it has become possible to justify theoretically and to implement in practice economic regionalization on the basis of territorial-industrial complexes. There importance from an economic standpoint consists in that they have a unified plan for the development of the economy, the distribution of the population and the protection of nature, which is drawn up taking into account natural peculiarities of the region.

The industrial centers that are being created in socialist countries carry with them potential possibilities for radical solutions to the problem of polluting the environment. Although within the framework of these centers it is not easy to provide for the necessary norms of greenery and water supply, it is precisely in such a distribution of industry that new prospects are opened up not only for centralized purification of wastes, but also for the creation of fully closed production cycles, whereby the wastes from one enterprise serve as raw material for another and one achieves almost 100-percent utilization of nature's material. Such distribution of industry, just as when it is transformed from a "center" into a complex, is possible only under socialism.

All this shows that the diverse modern technical systems, applied under the control of the society and in its interests, can provide for preservation of natural resources and protection of the environment. Constant improvement of the technology for processing natural material will make it possible to take advantage of its useful properties more completely.

Measures for the protection of nature and for the efficient utilization of nature's wealth are extremely expensive. Suffice it to say that the cost of purification installations sometimes reaches one-third of the cost of the fixed capital. And if one keeps in mind the protection of the basin of a river or an entire sea, then not one enterprise, even a very large one, and not one branch is capable of covering these expenditures. Only the entire country can be responsible for them.

And the effect from these measures goes far beyond the framework of individual enterprises. It can not even be calculated or determined in terms of ordinary indicators, and it sometimes becomes appreciable only on the scale of the entire society, being expressed in the vital tone of the people and in their creative activity. Moreover, this effect is not always evident immediately; it is sometimes manifested after years, decades and generations.

Of course, socialism, as the first phase of communism, still does not have all the possibilities of affecting the natural environment and preserving it; there is still a certain distance between the nature of socio-economic relations that make it possible to qualitatively change the exchange of substances between people and nature, on the one hand, and the practical possibilities of doing this, which are determined by the level of development of productive forces, on the other. But there is no doubt that socialism, in the process of carrying out its historic task--the construction of communism--at the same time leads man along the path of harmonization of his relations with nature and implements an optimal social restructuring of his environment.

The striving towards harmonization of the interaction between the socialist society and nature was expressed in the new USSR Constitution. It is written in the Fundamental Law: "In the interests of present and future generations, the USSR is taking the necessary measures for protection and scientifically substantiated, efficient utilization of the land and its minerals, water resources, and the animal and vegetable kingdoms, as well as for maintaining the purity of the air and water and providing for the reproduction of natural wealth and improvement of man's environment." (Article 18). The USSR Constitution has defined the obligation to be concerned about nature and to protect her wealth as one of the most important obligations of each Soviet citizen (Article 67). The Fundamental Law stipulates the state functions for the protection of nature (Article 73) and the responsibility for the protection of nature of local agencies, industrial enterprises, kolkhozes and sovkhozes.

The USSR Constitution has also legally determined the ecological policy of the Soviet state. To preserve nature and to deal with it taking into account its possibilities means also to obtain more and more from it--this is the way the issue is stated in a developed socialist society.

This approach to the problem was further developed in the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Improving Planning and Stepping up the Influence of the Economic Mechanism on Increasing the Efficiency of Production and Improving the Quality of Work." The communist party and the Soviet government again pointed out the need to utilize natural resources comprehensively, to develop and to established in five-year plans the work plans for the protection of nature and the environment and also plans for the utilization of side products and by-products, secondary resources and other materials.

The main means of optimizing the interaction between a socialist society and nature is all-around improvement of productive forces on the basis of science. Placed in the service of the people and applied for humanistic purposes, science opens up the broadest horizons for the favorable development of the utilization of nature. New kinds of energy and new methods of its utilization, new materials and possibilities of processing them, new products and ways of obtaining them--all this changes the relationship between people and nature and makes it possible to ease the "pressure" on one resource or another or even fully refrain from using it for industry, and opens up prospects for creating waste-free technology, and thus makes it possible to compensate for the consequences for the consequences of production and consumption that are harmful to the biosphere.

The rapid development of biology raises many issues of optimization and harmonization of the interaction between society and the natural environment in a new way. Biology opens up ways for people to transform the material of nature into things and products they need with the help of nature herself. Even in the current stage, living nature frequently turns out to be more effective in industrial cycles than "indirect" nature.

The most effective and ecologically acceptable methods of utilizing natural materials arise as a result not only of new discoveries and the creation of new technical equipment, but also because of optimal utilization of already existing means and implements of labor. Here a decisive role is played by the planning of industrial activity, whose improvement opens up a remarkable possibility of arranging organic interrelations between society and nature.

Centralized planning is one of the conditions for the harmonization of the interactions between man and his environment. Only under conditions of public ownership of the means of production and with the existence of scientific planning is it possible to carry out, for example, regulation of the distribution and functioning of the productive forces of society taking into account the territorial and natural potentials of the country as a whole and individual regions of it. In the USSR the development of general schemes for the distribution of branches of the national economy and large industrial complexes and the drawing up of plans for the development of economic regions are being introduced into practice more and more extensively, which is very important for increasing the effectiveness of the utilization of natural resources and the protection of nature.

Planning the territorial distribution of productive forces is inextricably related to the task of comprehensive utilization of natural resources. A comprehensive approach to their processing is the basis for the organization of so-called cyclical production, which does not discharge wastes into the natural water systems, into the atmosphere or into the soil and does not constantly take in more and more oxygen and water. If agricultural enterprises could also be included in this cycle it would be possible to achieve completely "waste-free" production. This is quite possible in practice in the modern stage of scientific and technical development.

Scientifically substantiated comprehensive planning of the utilization of natural resources, industrial and agricultural production and measures for the protection of nature make it possible in principle to develop the society's productive forces not only without harm to the environment, but even with improvement of natural conditions.

Planned accounting for the possibilities of nature presupposes planning the efficiency (or economy) of the utilization of resources. This concerns the idea that in calculated indicators of plans one should determine not only the "commercial output" delivered by one or another industry or enterprise to society, but also the expenditures of natural material for the production of the given product, that is, the difference between that which is "given to society" and that which is "taken from nature."

An important position among the means of harmonizing the interrelations between society and nature is occupied by the protection of nature itself--the activity directed toward the protection, restoration and improvement of the environment.

The protection of nature is not a prohibition of consumption and not a triumph of the principle "do not touch nature." It is not even just a service that keeps watch over its protection. The protection of nature includes a complex of measures for making the utilization of nature more efficient and it presupposes correct management of the development of interrelations between man and nature.

Because of the existence of the world system of socialism there arises a fruitful possibility of implementing comprehensive measures for the protection of nature in a unified program, not only on the scale of one country, but [illegible] territory of a number of socialist countries simultaneously.

While comprehensively developing bilateral cooperation, the CEMA countries assign a special role to multilateral cooperation, collective efforts and research in the sphere of the protection of nature. This cooperation began to take form in the middle of the 1960's. During 1964-1970 a total of about 100 joint projects for protection of the environment were successfully completed.

A decisive moment in the development of cooperation of the sister countries in the area of ecology was the adoption in 1971 of the Comprehensive Program for Further Deepening and Improvement of Cooperation and the Development of Socialist Economic Integration of the CEMA Countries, which included the problem of developing measures for the protection of nature, a problem that embraced 39 subjects. In 1973 Yugoslavia joined in the development of this problem.

In 1973 the council for questions of protecting and improving the environment was organized within the framework of the CEMA Committee for Scientific and Technical Cooperation. Actually a working agency was created which coordinates all scientific and practical collective activity of the sister countries for investigating and organizing the protection of nature. The council's work is carried out on the basis of the "General Developed Program for the Cooperation of the CEMA Countries and Yugoslavia for the Period up to 1980 in the Area of Protection and Improvement of the Environment and Efficient Utilization of Natural Resources that is related to this," which was approved by the CEMA executive committee. The eleven large problems embraced by the program touch upon practically all aspects of the protection of nature. Within the framework of the program work is being done to create new technological processes or improve existing ones, taking into account requirements of an ecological nature.

The socialist countries are prepared to cooperate in solving problems of the protection of nature not just among themselves. In the concluding document of the Conference on Security and Cooperation in Europe it says that protection and improvement of the environment and also the protection of nature and the efficient utilization of her resources in the interests of present and future generations constitute one of the tasks that are of great significance for the well-being of nations and the economic development of all countries, and that many problems of the environment can be effectively solved only through close international cooperation. The unwaivering efforts of the Soviet Union and other countries of the socialist community to develop this cooperation more extensively are demonstrated by all of their international practice in the matter of protecting nature.

It was the USSR that was the initiator of the prohibition of nuclear testing in three spheres. The conclusion of the agreement regarding this issue was a truly invaluable contribution to the matter of saving the biosphere from radioactive pollution. It was the Soviet Union that introduced at the 28th session of the UN General Assembly the proposal, "On Prohibiting Influencing the Natural Environment and Climate for Military or Other Purposes that are not Compatible with the Interests of Ensuring International Security and the Well-Being and Health of People." It is our country that is purposively and actively achieving a curtailment of the arms race and, in conjunction with sister socialist countries, advancing proposals concerning refraining from the use of nuclear weapons, completely prohibiting nuclear testing and not allowing the appearance of new kinds of means of man's destruction.

Today the Soviet Union has agreements concerning joint activity for the protection of the environment with dozens of capitalist states. Ecology is thus becoming a new field of development of international relations, and the active ecological policy of the socialist countries is becoming an important factor in the struggle for peace and for socialism's increased international authority.

2. Socialist Utilization of Nature and the Moral Responsibility of the Individual

Moral education under developed socialism is one of the most important factors in harmonizing the interaction between society and nature and forming in each Soviet person a deep understanding of the multifaceted significance of nature for his own life, health and physical and spiritual edification.

The moral aspect of the interaction between society and nature is especially clearly designated through the development of man himself. The world is reflected in man and man's world is the world of his environment. And the relationship of "man--environment," consequently, enters into the series of categories that have moral content.

This approach has taken shape historically. The struggle for humane relations among people, the establishment of such features of the personality as kindness, the desire to help the weak, and generosity have been manifested in one way or another by social man's activity for transforming nature. And it is not only out of a feeling of compassion that collective reason has always been against thoughtless cruelty and a predatory attitude toward nature while affirming love for it. The cruelty manifested outside human relations can also always be found within them.

This approach became even more crucial under the conditions of the scientific and technical revolution and the social renewal of the world. The disturbance of the normal course of natural processes and the exhaustion of certain natural resources as a result of human production activity expand the horizons of the moral evaulation of one's attitude toward nature.

This is especially clearly manifested under socialism, in the process of the formation and establishment of a new communist morality. Under conditions where all the wealth of nature and all of its resources are becoming public property, all objective prerequisites are created for the development in people of a broad humanistic view of the world. Concern for the all-around development of the personality, a socialist society, for its part, is interested in activating all factors that form it. The ennobling natural environment is not the least of these. Finally, the very basis of communist morality--the struggle for the construction of communism--presupposes concern for nature, for the forthcoming generation, like our contemporaries, will need all the riches the natural environment can give. Responsibility for the future and to the future has always distinguished the communist world view.

Man has always faced nature in at least two roles. First, he "represents" society to nature, mediating the goals and tasks of society in his activity. He is guided by social interest and transforms the surrounding world in accordance with that interest.

The individual, however, has a certain freedom in understanding public interest and in his ideas about it. Therefore he can oppose an incorrect understanding of public interest. On the one hand, even when this interest is formulated in the form of a scientifically substantiated task, when the implementation of this task is certainly not fraught with inevitable harm to the environment, individual people can make (and frequently do make) their own contribution to the realization of public interest in such a way that it causes harm to nature. In particular, certain negative phenomena in socialist utilization of nature are conditioned largely by precisely this elementary lack of understanding, an incorrect idea of what is useful and important to the society.

This is reflected, for example, in the fact, that because of the ignorance and bureaucratism of individual managers, funds alloted for the construction of purification installations are sometimes not assimilated, the land is used without conducting the necessary measures against water and wind erosion, timber industry enterprises allow overcutting of forests, good land is frequently alloted for nonagricultural needs and so forth. And the overwhelming majority of cases like these are not motivated by social necessity.

The inadequate awareness on the part of certain citizens of the true meaning of these actions is shown by their attempts to justify their decisions by higher interests and concern for the good of the people: purification installations were the last thing to be constructed because it was necessary for the plant to go into operation more quickly, to give products to the country and to overfulfill the production plan; they alloted fruitful land for a production facility in order to reduce the distance for communications and to save public money. And such "representatives of society" do not know that such "savings" end up in immense losses for the society.

As a whole, nature means incomparably more to human life than anything, any structure created by human labor. It contains within itself all that beauty whose fragments have been masterfully embraced in works of art that are so dear to us. It is the source of our joy and of all of our life, the field of our eternal quests and discoveries.

It is precisely this understanding of the universal significance of nature for the development of society and for the life of each man, its elevation to one of the highest places in the system of social and individual values, and it is that factor which makes it possible to intelligently compare the need and the possibility of causing harm to nature on behalf of public interest.

The individual faces the world of nature not only as a representative of his contemporary society, but also on "his own behalf," when he is fighting for his own personal interests and when he affects the environment in a certain way to achieve them. And he can affect this environment favorably if his understanding of the world correctly reflects the significance and value of nature, if he strives to protect it as actually his own, to use an expression of K. Marx, "inorganic body." This approach also corresponds to the interests of all of mankind, to the objective interests of a given society, and here the individual proceeds from moral positions both with respect to the society and with respect to nature. But there is also another approach whereby man essentially opposes society in his utilization and protection of nature, anarchically opposing personal consumer interests to public ones, and ignores the latter, acting as a plunderer and squanderer of natural riches which are essentially community property.

This pertains, above all, to poaching which involves an extremely immoral attitude on the part of the individual toward nature and society, a form of impudent open theft from the people. Soviet law severely punishes poachers, but here is what is surprising: many of them are convinced that the criterion of morality means nothing at all in evaluating their activity. This is shown by the fact that elementary moral norms still do not serve as a regulator of the attitude toward the world of nature for all Soviet citizens. Even under socialism some people think they have a right to act arbitrarily. This is a challenge not so much to nature as to society for the actions of a poacher are obvious flouting of the principles of socialist communal living.

We will succeed in preserving much more wealth and much greater possibilities for posterity if today everyone understands that the future will inherit from us not only industrial might, a social structure and accumulated spiritual potential, but also the natural basis for further social progress. The life of people of future generations will depend to a decisive degree on the condition in which our contemporaries leave this basis. This is why today's actions in one way or another predetermine the future flourishing of society. And in this aspect one should consider above all the moral responsibility for the protection of the world of nature.

In this connection, the task of moral education organically includes such spiritual training of the individual as would help him to look at the surrounding world with the view of a thrifty master who clearly understands that, having acquired power over nature, he must utilize this power responsibly.

Enlightenment of the masses regarding questions of the utilization and protection of nature must play an important role here. Now both secondary training institutions and VUZ's are presenting extensive propaganda of ecological studies and are introducing faculty and special courses in the study of the fundamentals of the science of the biosphere. Writers and artists and the mass media have begun to deal more with the problems of the utilization of nature. An atmosphere of increased attention to nature is gradually being created in the country.

Representatives of science have no small amount of moral responsibility for people's attitude toward their environment. It is precisely the results achieved in the development of science that make it possible for a society to justify its tasks and goals more precisely and to earmark the means of achieving these goals that are most effective and least harmful to the natural environment. These scientific results are a kind of objective basis for man's correct attitude toward nature and for an understanding of nature's diverse and permanent values. By convincing people of the need to optimize their influence over nature, science at the same time irrefutably shows that many of the presently existing technological processes will cost the society long-term losses in payment for temporary gains.

While emphasizing the special role of science and its representatives in the harmonization of the interaction between society and nature and in the creation of the fundamental possibility for people to take a communist attitude toward the natural environment of their life, one should not, however, forget about the circumstance that human activity, as a result of which the current ecological problem has arisen, has, after all, been "scientifically substantiated" in a certain sense, at least in recent centuries. Principles of "altering nature" have been advanced and substantiated. They largely determined and coordinated the practice of the utilization of nature and brought to the attention of society the ideas of the interaction between man and the natural environment, which at the present time and from the position of the socialist social system seem undoubtedly erroneous.

The complexity of the social role of the scientist and the high degree of his moral responsibility are also determined by the fact that through his activity and its results, he forms the world view of social man in a certain way. With each new discovery and each new scientific solution, the scientist--possibly without knowing it himself--lays more and more bricks in the foundation of the view of nature both as a "training ground" for testing the widsom of all-mighty man and as the field of unlimited free play of our essential forces. But in view of the power of embodied human knowledge and the brilliance of scientific thought, one should still not lose sight, as is sometimes the case, of the moral aspect of the development of science--the question is to whether, in the final analysis, the implementation of one or another great scientific idea or discovery will end up in good or evil for mankind.

A clear example of this unique kind of intellectual self-sufficiency in the approach to the "sluggish world of nature," which ends up in oblivion or in underestimation of the moral aspects of scientific activity, are the allusions of modern pantechnicalism, on the basis of which ideas concerning the technical transformation of the organic world originate, ideas about constructing an artificial biosphere and technical regulation of the environment, and attempts are made to interpret everything that is living as some kind of gigantic mechanism which can be controlled as simply as a machine.

When evaluating such ideas, which intentionally or not, bear the stamp of the primacy of technology over society, it is especially important to approach them not only from the positions of "pure" science, but also from the positions of morality, keeping in mind that they are fraught with the danger of using technical transformations to push the biosphere beyond the framework of parameters that are necessary for the normal functioning of the human organism. Moreover, even their theoretical development becomes an obstacle to harmonization of the interactions between society and nature since in these ideas nature is understood as something separate from the human essence, while the possibilities of transforming it can be objectively evaluated only by taking into account the biological needs of man himself and the adaptive capabilities of the environment. By convincing man that technical devices can perform any function better than nature itself can, these ideas psychologically incline man to deprive nature of certain of her of her functions unnecessarily. And this frequently leads to serious complications in the utilization of nature.

Not to conquer nature ruthlessly and crudely, not to reduce nature to a level where it is necessary to assign its functions to society, but mutual cooperation with nature--this is the way one can formulate the basic moral principle that regulates social and collective utilization of nature.

This attitude is determined by the world view as a whole, just as in general ideas about the world and about man's postiion in it determine those ideological-moral positions from which people erect their life's plans. Metaphysical explanations of the universe, as a rule, involve grossly utiliterian consumption of nature, with a race for immediate effect and with a lack of concern for the consequences of a predatory attitude toward natural resources. A dialectical understanding of the interaction between society and nature and an orientation towards social and future interests, conversely, dictates a thrifty attitude toward natural resources and concern for the ecological condition of the entire planet, for the viability of each of its parts, right down to the smallest islands. It is precisely in the age of the establishment of a new society, the triumph of a dialectically materialistic world view that is has become critically necessary to think and act, in the words of the Soviet scientist V. I. Vernandskiy, "in the planetary aspect."

Bourgeois morality and bourgeois social science have reacted to this need in their own way--with the creation of an entire series of ideas of the "ecological awareness of mankind," "ecological ethics," "bio-ethics," and even "ecological religion." At the same time, like a counterbalance to these ideas, there was discussion of the "eternal curse" of man to create evil, as if his amorality were biologically conditioned and more and more blame was placed on natural sciences and technology.

The groundless, contradictory and also reactionary nature of many of these views and ideas is obvious. But it is also obvious that in their totality they reflect a certain advancement in the nature of the bourgeois conception of the world, a chaotic search for that theoretical picture of the world which would take into account the moral aspects of man's attitude toward nature and the geographical, ecological, economic and political aspects of man's life on the planet earth, and would reflect the time factor by assuming responsibility to future generations. In other words, these ideas in their unique, sometimes inverted form, reflect the objective need to proceed from the idea of the unity of man and nature.

But within the framework of a bourgeois world view it is impossible to solve correctly all these problems that profoundly disturb mankind, either theoretically or in practice. The fact is that the new attitude toward the world presupposes new forms of human "assimilation" of the world. After all, regardless of the section or plot of land, regardless of the territory an individual, a group of people or a nation has at its disposal, they are all still using part of our common human property--nature. No one can or should try to be the absolute owner of the things under his control. When speaking of land that is in agricultural circulation, K. Marx noted: "Even an entire society or nation or even all simultaneously existing societies taken together are not the owners of the land. They are only its masters who use it like boni patres familias (good fathers of families.--Ed) and they should leave it in a better condition for subsequent generations." (K. Marx and F. Engels, Works, Vol 25, Part II, p 337).

A Marxist-Leninist world view and the successes of the new society which are expressed in the attainment of the goals of developed socialism show that man can and should likve on his planet in a way different from how he lived before, and if he is concerned for himself he can not but be concerned for the condition of the organic and inorganic world that surrounds him.

In an age when mankind is completing a historic transition to communism, when the embodied forces of human knowledge are already comparable with the forces of nature, it is necessary for man's intellect and his moral and aesthetic qualities to develop in harmony. Having assimilated and inhabited the planet and having entered space, increasingly transforming production from a series of simple labor operations into a complicated scientific and technical complex, having placed not only the properties of natural materials and substances of nature, but also its processes themselves in the service of human needs, and increasingly using science as a direct productive force, man should be comprehensively prepared for intelligent application of these great achievements of his.

3. Ecology and the Ideological Struggle

The world community is becoming more and more deeply aware of the significance of qualitative improvement of the utilization of nature and measures that are being conducted in this area by socialist countries. Under these conditions bourgeois ideologists try to take advantage of the increased interest of the masses in the problem "society--nature" in order to acquire political capital.

Within the framework of bourgeois social science many ideas have already been created which represent the modern ecological situation in a distorted form which is advantageous for the monopolistic ruling elite. The ecological crisis is represented in these ideas as some kind of inevitable result of human history which does not depend on socio-economic relations, but on ecological problems that transcend class distinctions. Thus Western propaganda tries to show that the protection of nature is "above politics," that the bourgeois class and capitalism are not responsible for the appearance and aggravation of problems of ecology. At the same time measures for the protection of nature which the monopolies have had to conduct are widely advertised and the monopolists, while not stopping even at predatory plundering of natural wealth in their drive for high profits, present themselves almost in the form of the major caretakers of the fate of mankind.

Communist parties and democratic forces of western countries are doing a large amount of work to explain the political significance of questions of nature by showing that the fight against pollution of the environment and against destructive utilization of natural resources can be successful only if it becomes part of the struggle for social transformations, revealing the link between the ecological crisis and the overall crisis of capitalism.

The progressive press shows the real reasons for bourgeois attention to problems of ecology, which consist primarily in that the monopolies which control mainly the newest branches of industry are using statements against the pollution of nature as a means of fighting with competitors whose production activity involves great damage to the environment. It is precisely these monopolies that were the initiators of various kinds of propaganda campaigns and began to make sure that authoritative agencies adopted measures for ecological protection which involved producing costly technical equipment, conducting large-scale scientific research and so forth.

In bourgeois interpretation of the ecological crisis all arguments in one way or another revolve around the scientific and technical revolution. Indeed, the environment has revealed the limits of its capabilities primarily against the background of rapid development of processes related to accelerated scientific and technical progress--rapid industrial development, urbanization, intensification of land utilization, and population increase. But, sidestepping these real processes, bourgeois ideologists arrive at conclusions and decisions which nearly always distort the existing situation.

The methodology for reaching these conclusions is always one in the same: the scientific and technical revolution, considered in isolation, outside of social conditions, is declared to be either the only saviour or the main destroyer of nature. Moreover, while the former evaluation prevailed not so long ago, the beginning of the 1970's was marked by the assertion of the latter. The rosy optimism elicited by the successes of science and technology began to give way more and more to the concerns generated by their unforeseen social, political and ecological consequences. And bourgeois social thought, when analyzing the "ecological role" of science and technology speaks against them with the same passion that marked their proclamation in the 1960's that science and technology were the keys that opened up the way to a "golden age" for mankind. Bourgeois propaganda is turning the scientific and technical revolution into the curse of society; appeals are ringing out to refrain from "costly and useless science," from "destructive technology" and to turn back--to the "simple life," to the idle rural existence of feudal times, which will make it possible to restore the unity of man and nature.

Bourgeois technocracy, without considering the world outside the power of mighty industrialism and imagining future humanity in innumerable tons of metal, quantities of automobiles and meters of fabric, has served as a source of apocalyptic ideas of the interaction between man and nature. By imagining the transfer of modern methods and rates of growth of the consumption of natural resources to the future, bourgeois futurologists have obtained indicators of the utilization of nature which clearly exceed the capabilities of our planet. On this basis numerous "theories" have arisen --growth limits, the world economic collapse, socio-political complications, predictions of forthcoming chaos, famine and so forth.

In western studies of the future they capriciously combined positive aspects with the creation of myths. In them one can see enticing attempts to develop a quantitative model of the development of the modern world, incorrect extrapolations from the utilization of nature by highly developed capitalist countries to all other countries, and the discovery of more effective solutions even within those limited frameworks that were selected by bourgeois futurologists. Yet it is obvious that the apocalyptic ecological theories are organically interwoven with apocalyptic constructs of a more general, philosophical-sociological plan, at the basis of which lies a religious and mythological idea of the fatal inevitability of "judgement day"--the destruction of mankind.

The pessimistic conclusions reached by many bourgeois authors when analyzing modern utilization of nature are propagandistically developed and, frequently with great juggling of facts, are presented to public opinion as if they can be applied in the same way to any point on the globe, regardless of the social system that exists there. Equipped with the magic of figures and formulae and the high scientific authority of one specialist or another, this kind of propaganda is frequently extremely effective. For example, the idea of "zero economic growth" which is advanced as a kind of hypothesis, when placed in the mouths of certain bourgeois propagandists has acquired an almost absolute meaning, right down to the statement that economic growth is absurd: if one were to refrain from it this would make it possible to make the world more stable, to bring society closer to a balanced condition, and to make man's interaction with nature more harmonious.

Even quite recently the role of economic growth was interpreted by bourgeois science in a diametrically opposite way. For it was precisely economic growth that was directly related to the ideas of "a society of universal prosperity," "a society of mass consumption," "a consumers' society," and a number of other documents whose basic significance was all-around stimulation of consumption as a most important factor that would bring about continuous and limitless growth of capitalist production, which means also capitalist profit. For a long time economic growth was considered to be a panacea for all social ills of the private property system, a guarantee of the happiness of the western world, a means of solving all social problems. But unemployment, inflation, the currency and energy crises and, finally, in the direct sense, the ecological crisis overturned the universal significance of economic growth, about which bourgeois propaganda had spoken so loudly.

The reason why western ideologists changed with such surprising rapidity and ease from praise to condemnation becomes quite understandable if, in addition to what has already been said, we turn our attention to the fact that the appeals to refrain from economic growth are addressed to the entire world. They ignore the principle difference in the consequences of stagnation of production for the United States, the FRG, France, Japan and England and, say, for Uganda, Bangladesh, the Republic of Chad and other developing countries. After all, this means retaining a high level of economic development and consumption for the former and maintaining a low level for the latter; one group has the possibility of continuing to retain economically underdeveloped countries as raw material bases and the other group has the sad prospects of remaining the object of imperialist plunder. Here is it important to take into account that today 20 percent of the world's population, living in industrialist capitalist countries, consume 80 percent of the world natural resources and cause about 90 percent of the world devastation and pollution.

The ideas of bourgeois propaganda to the effect that the degradation of the environment is caused by man's "insatiable desire" for consumption amount to similar ideological speculation. Essentially they are attempts to find sources of the ecological crisis not in the sphere of production, but in the sphere of circulation and consumption. And if this is so, the problem can be solved by a simple change in man's needs. Bourgeois propaganda thus advances to the forefront industrial consumption of natural wealth, which is the main source of the ecological crisis, and they emphasize individual consumption. This statement of the problem fully removes any complaints against the entrepeneurs regarding the destruction of nature and it justifies them morally: after all, the producers pollute the environment only by the fault of and for the sake of the consumers who want to obtain more and more goods of various kinds.

One can not, of course, forget about certain objective historical factors in the present ecological difficulties--the impossibility of immediately utilizing natural material comprehensively, the inadequate knowledge about nature, the imperfection of technical equipment and so forth. But neither can one fail to take into account the fact that in all stages of our history people have been able to achieve much greater economic results with a much smaller expenditure of natural resources. Expenditures of natural wealth, at one level of development of productive forces or another, have never been determined only by man's demands and requirements; they have also been determined by the type of socio-economic system and the nature of the social structure. For example, in the United States, according to certain estimates, in the period from 1929-1963 from 47 to 56 percent of the gross national product was produced without taking into account the actual needs of the society. Consequently, about half of the natural wealth assimilated by the United States during that period was expended without taking into account the real needs of that country.

The extremely important political and ideological charge in the slogan concerning the revision of needs also marked the appeal of bourgeois propagandists to all mankind to consider the damage caused by overpopulation of our planet: there are too many people, they say, and they are "eating up" the surrounding world. The bourgeois press sometimes even asks for political force in order to make other countries carry out programs for reducing the birth rate. And what is especially typical is that the most "concerned" are D. Rockefeller, those who control the Ford and Carnegie Funds, and rich families of England, Sweden and other western countries.

The attention payed by bourgeois propagandists to the processes of population is brought about primarily by the fact that world capitalism does not now need additional working hands. And labor force which it can not assimilate, subject and include in the sphere of extracting profit is a direct threat to its existence. The bourgeois countries have felt in the population growth a premonition not only of future disturbances of political stability in the countries that supply raw material, but also a change in their role as a result of objective factors. The more people there are the more the country consumes its own resources and the monopolies have less chance of controlling raw material, petroleum and ore. Therefore the "demographic explosion" was branded by bourgeois ideologists as an obstacle on the path to the well-being of the masses and to the improvement of the environment. The ecological crisis was thus another means of developing the demographic policy that is suitable to the bourgeoisie, although the pollution of nature and the expenditure of natural wealth are certainly not determined only by the numbers of population.

The ideological development of the problem "society--nature" is becoming a special area in bourgeois foreign political propaganda as well. The developing countries are becoming the object of their primary attention. Bourgeois ideologists are trying to form the opinion that it is precisely the young states, while strengthening their national economies and developing their own industry at accelerated rates, that violate nature most of all and it is their actions that are especially dangerous ecologically. Here again there is an attempt to adapt an actually existing problem to imperialist interests. The fact is that in certain developing countries there is a certain underestimation of problems of the environment. Concerned primarily with such problems as hunger, poverty, unemployment, illiteracy and scientific and technical backwardness, these countries do not have the possibility of making any significant allotments for the protection of nature, which, as was already noted, is an extremely costly business. The shortage of funds is exacerbated by haste and incompleteness in the assimilation of natural resources, the application of obsolete technical equipment, poor development of science and so forth.

Condescendingly pointing out the shortcomings in the protection of nature in the developing countries, bourgeois propagandists, as a rule, remain silent about their causes, about their direct relationship to the legacy of colonialism. Many centuries of material and spiritual plundering of the colonies, the unrestrained exploitation of "foreign" lands and resources--these are the source of the ecological difficulties that are appearing in certain young states.

Recently there has been an especially dangerous imperialist practice in Asia, Africa and South America, which has been called "ecological colonialism": it is reflected in the fact that certain highly developed capitalist states not only live more and more at the expense of the natural wealth of other countries, but also export their ecological problems: they transfer to developing countries those enterprises that pollute the atmosphere most. Thus they achieve a double advantage--both economic (because of the less expensive resources and labor force), and moral (having closed the enterprise in the home land, the owner can demonstrate to the public his concern for the protection of nature).

Nor does bourgeois propaganda ignore socialist utilization of nature, primarily Soviet. The condition of the environment in socialist countries is studied most carefully. Each case of trouble in this area is tendenciously generalized and used as a basis for extending an anti-Soviet and anti-communist spirit to ecological problems.

These cases, as a rule, are subjected to critical analysis in the Soviet press and are frequently even eliminated, but they serve bourgeois propaganda as a means of declaring that the "abuses" of the natural environment under socialism are no less than in capitalist countries.

Scientifically substantiated regulation of natural processes and their intelligent transformation are possible only with the corresponding scientifically substantiated control of the society. Private property precludes this possibility, for the interests of the owners even of two neighboring plots of land coincide extremely rarely. Only centralized leadership which has a clear-cut plan for the functioning of social productive forces and is capable of fully controlling and coordinating their development can regulate utilization of nature and the protection of the environment. It is no accident that questions of ecology are increasingly becoming the prerogative of national states. Contrary to the opinion of bourgeois ideologists, the experience accumulated by socialism in the utilization of nature convinces us that it is possible to "leave the land to posterity in improved condition" only with a social organization that is capable of arranging all-around actually systemic interconnections with nature and regulating the process of public labor based on the real needs of the society and taking into account the possibilities of nature.

Permeating the discussion of the problems of the utilization of nature with a spirit of anti-communism and anti-Sovietism, bourgeois propaganda essentially appears as an opponent of unified actions on the part of mankind to improve his environment. Under modern conditions when man through his increasing activity is rapidly changing the face of the planet, the biosphere and the utilization of nature have become a completely international field. The vanguard of society accepts the improvement of nature as an extremely great international task. Detente and the establishment of principles of peaceful coexistence as norms for interrelations among states with differing social systems opened up broad horizons for cooperation in this area for the first time in history.

Peace and the coordinated and concerted efforts of nations are inseparable in the sphere of the utilization of nature. Trying to create the impression that the experience of socialism in this regard contains nothing principally new and even calling for the exertion of "international pressure" on socialist countries in order to "force" them to care for nature "better," bourgeois propaganda is sowing distrust among states and in one way or another opposing the process of detente.

The parisitic attachment of bourgeois propaganda to ideological aspects of ecological problems can not last long if only because the socialist utilization of nature, through its obvious advantages, refutes the conjectures of our ideological opponents. But these advantages are obvious only to those who have the opportunity to compare the two types of relations between society and nature without prejudice. And it is precisely this opportunity that bourgeois propaganda is trying to take away from the masses.

It is necessary to oppose these actions with convincing counterpropaganda that is based on a profound knowledge of the condition of socialist utilization of nature, a broad, authoritative demonstration of it, frank analysis of mistakes and shortcomings and explanation of their causes. It is quite obvious that a whole number of problems related to the condition of the environment as a whole on our planet are either a legacy of the past or the result of a lack of coordination of the actions of modern man and the immense expenditures on armament. The harmful role and influence of capitalism are clear here, just as the possibilities and limits of improving the interactions between man and nature are clear under the conditions of the existence of opposing socio-economic systems.

Let us repeat again that man's attitude toward nature is a social attitude. It inevitably bears the stamp of the entire style of the entire way of life of the society. Communism as the society of the future predicably presupposes an interest in preserving nature for essentially we are speaking about preserving the natural basis for the creation of communism and the establishment of a system of real humanism on earth. All these are convincing arguments against the ecological demogogy of the bourgeoisie who are striving to actively influence the course of the ideological struggle in the sphere of the relations between society and nature as well.

5. The Scientific and Technical Revolution and the Creation of a Material and Technical Base for Communism

The Soviet society is faced with a worldwide historic task: the all-around perfection of developed socialism, which also means the origination, growth and accumulation of qualitatively new phenomena, material and spiritual prerequisites for the transition to a higher phase of the communist socio-economic formation.

Regardless of how great the constantly growing significance of improving social relations, developing spiritual culture and forming a new man may be under the conditions of the new structure, the basis of social progress has always been material progress. This pertains also to the stage of developed socialism and to the highest phase of the communist formation, communism itself.

In the implementation of the immense tasks of communist construction, the process of creating its material and technical base occupies a special position: only with a sufficiently high level of material production, above all, productive forces, is it possible to change over to the communist principle of distribution "from each according to his capabilities, to each according to his needs," to the insurance of complete well-being and free all-around development of all members of society. The solutions to such key problems of social development as overcoming the essential differences between mental and physical labor and between the city and the country, also require the elimination or the transformation of outdated forms of labor on the basis of progress of science and technology--the main lever in the creation of a material and technical base for communism.

But even this does not exhaust the decisive significance of the construction of a material and technical base for communism. One can not lose sight of the concrete historical situation in which communist construction is taking place or the peculiarities of the modern age, an age of revolutionary transition from capitalism to socialism, an age of the existence and the struggle between two opposing world systems. This essential fact of modern history is accompanied both by peaceful competition between these systems and by the danger of military conflict which is related to the existence of reactionary and extremist forces of imperialism who strive to resolve its contradictions by means of militarization of the capitalist economy and state and then by military adventurism. This, naturally, makes it necessary for the socialist society to create an economic and scientific-technical potential which would be adequate to protect it from military threats and would be a weighty argument in a foreign policy which is directed towards strengthening peace and security of nations, toward the creation of a fair system of economic and other international relations on the basis of equal rights, and toward the insurance of favorable conditions for the construction of socialism and communism in the USSR and other sister countries as well as for social progress of all of mankind.

"Communism," V. I. Lenin pointed out, "compared to capitalism, is the highest productivity of the labor of voluntary, conscientious, united workers who are using advanced technical equipment" (Poln. Sobr. Soch., Vol 39, p 22). And the achievement of this labor productivity takes place, as practice shows, in the process of the creation of a material and technical base for communism, and the implementation of tasks for organically combining the achievements of the scientific and technical revolution with the advantages of the socialist system of management. This is why at the international Conference of Communist and Workers' Parties in 1969 L. I. Brezhnev noted that the extensive development of the scientific and technical revolution has become one of the main aspects of the historic competition between socialism and capitalism.

1. The Scientific and Technical Revolution: On the Edge of Problems of Modernity

F. Engels wrote that "the striving for happiness requires ideological rights least of all. Most of all it needs material means . . ." (K. Marx and F. Engels, Works, Vol 21, p 297). The advancement toward the highest phase of the communist formation has as a mandatory prerequisite the creation of the necessary material and technical base. This is an axiom for all who share the scientific and materialistic view of social development.

The history of science, technology and economics long ago confirmed that the material means for social development, improved well-being and human culture are created more successfully as scientific progress becomes broader and deeper and as its achievements are embodied in practice and production more fully and more energetically. In our day these processes are acquiring a qualitatively new scope and are determining the main paths of the development of material production. The transformation of science into a direct productive force and the purposive mutually augmenting and mutually stimulating development of science and production, which exerts an influence on all aspects of the life of society and of man, constitutes the most important characteristic of the presently developing scientific and technical revolution.

This is a worldwide, global phenomenon, a process that is taking place in two principally different social forms.

The unity of the scientific and technical revolution as a world process is conditioned by the common laws of scientific knowledge and also by the similarity of concrete methods and devices for embodying scientific discoveries in production, in technical systems and in technology. Still it is obvious that there is an essential, basic difference in the conditions and results of its development under socialism and under capitalism. It would be inadequate to discuss only the different social consequences of the scientific and technical revolution in countries that belong to opposing socio-economic systems: the principle differences are the social goals attained by means of scientific and technical progress and the participation of the masses in its implementation and in the utilization of its results.

Under socialism the scientific and technical revolution serves the goal of fuller satisfaction of the growing material and spiritual needs of the workers. As it develops and as the society's economic might grows, everyone's wealth increases. As the material base of the national communist becomes stronger, there is more active participation of an ever larger number of citizens in the management of all the society's affairs and the possibilities for the all-around development of the individual expand.

For bourgeois countries the scientific and technical revolution is a way of increasing profit and this means a method of expanding the possibilities of social maneuvering, a method of prolonging their dominance through more powerful means of state-political and spiritual-psychological influence over the population that are created with the help of science and the latest technology. Under capitalism the scientific and technological revolution retains and strengthens class antagonisms. The omnipotence of the monopolies becomes deeper and they have the concentrated economic might of the society exclusively at their disposal. At the same time there is increasing alienation of the working masses from that wealth which is exclusively the creation of their hands and minds. This wealth is now growing to an ever greater degree as a result of the limitation of the possibilities of social and cultural progress of the individual working man. This attitude toward science and technology on the part of modern capitalism, which is striving to attain the greatest profits, is manifested especially clearly in the fact that science and technology are being used for militarization of the economy and for an unrestrained arms race which is fraught with danger to the fate of all mankind.

Thus the sicentific and technical revolution is a world process which has at its core different content under the conditions of the two world systems. And so it is quite natural that the Marxist-Leninist ideas of the scientific and technical revolution are opposed by the numerous bourgeois and petit bourgeois interpretations both of this process as a whole and of individual aspects, manifestations and consequences of it.

"Technological" collectivization of production under capitalism is used by bourgeois theoreticians to publicize ideas to the effect that the scientific and technical revolution basically changes the nature of private capitalist property. They assert that the concentration of capital leads to the appearance of certain kinds of principally new social forms.

They are seconded by modern revisionists who state that technical progress directly creates social forms of production and that new technical equipment inevitably and directly involves man in different social orders and leads "to the transformation" of capitalism into a "developed industrial society," and eliminates class differences.

Of course, along with technical progress there is a collectivization of capitalist production and increased concentration and centralization of capital, but these processes do not lead directly to the appearance of public property, but only create material prerequisites for the changeover to this form. After all, the means of production, as usual, are in the hands of individual capitalists or of a capitalist corporation and the results of production are still private property. ". . . capitalist production," wrote K. Marx, "is essentially private production, even if there is a capitalist association instead of an individual capitalist" (K. Marx and F. Engels, Works, Vol 24, p 275).

The most general platform of anti-Marxist versions of the scientific and technical revolution is the so-called "technological determinism," that is, the consideration of individual patterns in the development of the technical base for production and science and its complication in various spheres of public life in isolation from the socio-economic, political and ideological content of social development.

One of the most marked manifestations of "technological determinism" in past decades has been the idea of "stages of economic growth" of the American sociologist W. Rostow, which has all the basic indicators of subsequent anti-Marxist ideas of a similar nature: it was openly anti-communist (Rostow's book which presented this idea, had the subtitle "Noncommunist Manifesto"); it took as its initial premises certain aspects of the scientific and technical revolution (in this case it was mainly increased labor productivity, higher wages for skilled workers and mass production of a certain selection of consumer goods which require the utilization of the achievements of science and technology; automobiles, television sets and so forth); and finally, it was distinguished by the borrowing of individual fundamental points of Marxism which were taken out of the context of a materialistic understanding of history, and the striving to create the appearance of a scientific prediction of future development (numerous subsequent bourgeois and revisionistic ideas which relied especially on that aspect of the matter and now have come to constitute a new area--so-called futurology).

The idea of "stages of economic growth" thus contains the main features of a whole number of openly anti-communist, liberal and revisionist theories which are distinguished by their authors' adherence to various socio-political forces and groups of bourgeois society, by their specific political and ideological goals, and also, of course, by the concrete scientific or literary material used in them.

Without going into an analysis of the reason for the replacement of certain "fashionable" ideas that are parasitically attached phenomena and processes of the scientific and technical revolution with others, let us simply point out that their subject is becoming more and more shallow: general historical laws and tendencies of development are clouded over and recede to the background. To replace them, bourgeois and revisionist authors offer a description (and as basic factors) of secondary, primarily socio-psychological processes--changes in taste, interest, fashion, demands and so forth. An analysis of social reality is replaced by the compilation of a possible model of the "quality of life" with a given level of progress of science and technology or by an interpretation of a subjective idea of various (also arbitrarily selected) groups of bourgeois society concerning it. The alienation of labor under the conditions of capitalism which is deepened by the effects of scientific and technical progress is evaluated as some general aspect of modern times, and so forth.

A decisive part of the offensive and uncompromising struggle against bourgeois and revisionist ideas of the scientific and technical revolution and the propaganda schemes that are based on them should be an in-depth and concrete development of the Marxist-Leninist theory of the scientific and technical revolution and publicity of the conclusions of this theory which have been verified in practice and have proved themselves as "operating" productively.

Investigation of problems related to implementing the task of organically combining the achievements of the scientific and technical revolution with the advantages of the socialist system of management constitute a most important part of Marxist-Leninist teachings about the scientific and technical revolution. They include a determination of the most promising tendencies in the progress of science and technology, the development of the most efficient ways of embodying the achievements of science in technical and technological solutions, the solution to problems of controlling scientific and technical progress, the mobilization of all factors in the intensification of the development of science and the application of its achievements in production.

The increasingly extensive introduction of the results of the progress of science and technology into production and the disclosure of the most obvious socio-political aspects of its influence on social life have made it possible to reveal the essence of the scientific and technical revolution with greater substantiation and depth. While previously there were attempts to view it in terms of some single group of problems (chemization, automation of production, and so forth) in some totality of phenomena or processes which reflect one or another peculiarity of scientific and technical progress, now one can single out its general peculiarities as a process of the transformation of science into a direct productive force.

Now one can better see certain directions of the transforming influence of science on material production or, in other words, directions of the development of production along the path of its transformation into the material and technical base of communism.

Above all, one immediately sees that the implements and means of labor are being transformed: industrial production is based on system of machines in which an increasingly large proportion is comprised of individual automated parts of the technological process such as automated control systems (asu). Comprehensive mechanization and particularly automation are gradually but steadily embracing even agriculture and branches of the infrastructure (transportation, communications, and so forth).

Of increasingly great economic significance is the creation of new--synthetic and artificial--materials which replace natural raw material that is in short supply and cost less than natural material does, and sometimes even surpass it in quality since the modern level of science and technology already makes it possible in principle to obtain raw material which has desired properties that are given ahead of time.

New implements and means of labor and new, artificially created materials mean radical transformations in production technology. We are using more and more extensively high temperatures and pressures (including the application of explosive energy), cryogenic (that is, low-temperature equipment), intensive chemical and microbiological processes and new means of measurement and regulation. All this requires a maximally high level of mechanization and automation and the introduction of electronic computer equipment which makes it possible to insert more and more technical means and devices between man and the immediate production process. The proportion of manual labor is decreasing and the worker's intellectual load is increasing.

The appearance and introduction of new technical equipment and technology contribute to expanding man's access to new sources of raw material and energy, which are actively being sought by science. Old sources are being used more intensively: the efficiency factors of energy-producing and energy-consuming installations are increasing and the extraction and processing of natural raw material are becoming more complete and comprehensive. Additionally, existing sources of energy and sources that are possible from the point of view of extensive utilization in the foreseeable future are being augmented by the splitting of the atom, solar radiation, the power of the tides, the internal heat of the earth and even thermonuclear synthesis.

Science contributes to organizing production on the scale of the society by determining the optimal ratios among branches and territorial complexes and rational production ties among them and within them. Without this, even the most highly efficient parts of production, working without coordination, can not produce the necessary results. Planning and proportionality in production are becoming an objective prerequisite for national economic success But in order for these features of production which are objectively conditioned by the nature of socialism to be fully revealed, it is necessary to constantly raise the scientific level of administration and planning.

Even a brief survey of the directions of the influence of science on production shows that the task of combining the achievements of the scientific and technical revolution with the advantages of the socialist system of management is truly multifaceted and comprehensive. In order to carry this task out successfully one needs a goal-directed strategy that is realized through the joint efforts of the state, economic administrative agencies, scientific institutions and individual production units--enterprises and labor collectives. In other words, this task is nationwide and success in carrying it out as in the entire matter of creating a new society, depends on the active participation of the working masses in it.

The circumstance that, under the conditions of a developed socialist society, the scientific and technical revolution is an object of mass activity and that the success of its implementation depends largely on the breadth and degree of activity of this mass which is the true subject and creator, reflects the advantage of socialism over capitalism in carrying out the deepest processes of transforming science into a direct productive force for society.

The revolutionary, spasmodic growth of the role of scientific knowledge in production and other spheres of social life takes place in three areas. The first, the most noticeable and therefore also the most discussed is the embodiment of scientific achievements in production technology and in technical equipment for labor and life. The second is a qualitative change in the labor force which is based on the achievements of science: under the conditions of the scientific and technical revolution high occupational qualifications can no longer be achieved only as a result of accumulated production experience; they require a sufficiently high level of general education and culture as well as special knowledge, that is, a certain amount of scientific training for the worker. The third is the restructuring of the organization of administration and production on a scientific basis. And if in the first of these areas of the development of the scientific and technical revolution capitalism still has certain advantages, in the development of the "human factor" (or the "human element") of material production and also in terms of the possibilities of its scientific organization on the scale of the entire society, socialism has indisputable historic advantages. By surpressing the personality of the working person and impoverishing it, capitalism inevitably blocks off the road to the future, thus demonstrating that it is historically doomed.

Socialism's main reserve, its "trump card" in the world competition with capitalism, is its superiority in the development of the human being as the main productive force of the society. In scientific organization of production, in the constantly rising level of administration and planning, in all areas of economic management, in the creation and extensive dissemination of increasingly efficient methods of organization of collective labor, in the maximum enrichment and development of the spiritual--social-moral and intellectual--potential of each person, in the activation of those labor motivations and stimulae which most fully reflect the creative nature of their activity--in all this the indisputable advantages of liberated labor are manifested.

In this connection, the socio-political significance of socialist competition of workers increases especially. Under the conditions of developed socialism it also resolves problems related to the development of the scientific and technical revolution: maximum growth of labor productivity, increased efficiency of public production, and the achievement of the highest quality indicators. In the modern stage of socialist competition the object of creativity for increasingly large masses is not only individual advanced labor devices, not only technical improvements, but also innovation in the area of economics and the organization of production, which leads both to structural change of local production units (brigade organization of labor at enterprises, comprehensive competition in a single technological chain of processes, and so forth) and to improvement in production relations and administration on the scale of the branch, the region and the entire national economy. This is why the party considers the development of competition in its modern forms to be a crucial political issue.

The intellectual potential of the workers is increasing at rapid rates as is the level of their education and culture which comprise the base for further increasing the role of the "human element" in the development of the scientific and technical revolution and in maximally efficient utilization of its achievements.

Why is this aspect of the matter especially important in connection with the development of the scientific and technical revolution? The introduction of new technical equipment and technology and the intensive application of science in production requires, as was already noted, a certain amount of scientific training for each worker and a certain general educational base, without which the assimilation of the latest technical equipment would be (and, unfortunately, is) extremely difficult. In a number of branches of industry the kinds of production that come to the forefront are those which require for their efficient functioning a contingent of workers who have higher or secondary specialized education. Therefore indicators of the rising level of education show not only successes in the general cultural development of our people, but also the degree of readiness to accelerate scientific and technical progress even more.

While before the beginning of the first Soviet five-year plan, in 1928, there were 521,000 specialists working in the country's national economy (233,000 of them had a higher education and 288,000 had a secondary specialized education), a half century later there were 26.4 million (11.1 million of them had a higher education and 50.3 million had a secondary specialized education). The growth is immense and the success is obvious, but the scope and complexity of the task of transforming science into a direct productive force are so significant that all this should be considered only as a starting point for even more rapid advancement. It is necessary for the corresponding state agencies and all the society to pay more attention to the quality of education in of its areas: updating the content, perfecting training methods, and improving its organizational forms. Without this it is impossible to increase and utilize the spiritual potential of a developed socialist society effectively enough in the interests of further progress of science and technology.

Of course, the quantitative and qualitative development of this potential in keeping with the requirements of the scientific and technical revolution also presupposes accelerated development of science itself, which in our day is not only the sum of knowledge, but also an immense, ramified social institution, a kind of knowledge industry intended both for direct practical application and for the creation of a fundamental stockpile.

To a certain degree, the rates of development of science are reflected in the figures of the growth of the numbers of scientific personnel. There are 1,314,000 of them in our country (1978)--one-fourth of all the scientific workers of the world, while during the prewar period (1940) there were only 98,300 of them. Among the Soviet scientific workers, 36,600 are doctors of sciences and 371,200 are candidates of sciences. The Soviet state, the scientific community and its organizational center, the USSR Academy of Sciences, are making efforts to improve the quality of research and the training of research personnel, which should contribute to increasing the efficiency of science, to increasing the "return" from its results in production and to developing the entire society.

A special task of the entire revolutionary transformational practice during the period of developed socialism is the formation of a new man. In this connection attention is drawn to the following problems: a) the creation of objective conditions for the development of the individual and for meeting requirements placed on the quality of the worker which corresponds to the main tendencies of modern socio-economic and scientific-technical progress; b) a change in the position of the worker in industry in connection with the change in the nature of labor, the development of mutual labor ties and the rise of its cultural and technical level; c) the formation of requirements for creative labor on the basis of the development of ideological and moral motives for labor activity, both individual and those brought about by collective organization of labor.

It is precisely the mass formation of a new type of worker who has scientific training and a high feeling of responsibility for success of the common cause and is able to approach creatively the constantly arising new problems, that is a necessary prerequisite for the transition to a communist method of production. Only after having acquired these qualities can the worker successfully solve the problems of creating a material and technical base for communism.

The preservation and "proliferation" (through increased education and skills, a change in the kind of labor, the mastery related operations and occupations, and the accumulation of the creative elements of labor) of the main productive force, the worker, harbor that reserve which can be used in time to surpass capitalism in the level of labor productivity.

The specific nature of social and moral stimulae for labor present a special problem under the conditions of the scientific and technical revolution. A broader spectrum of these stimulae and their great intensiveness under socialism constitute another source of our success in competition with capitalism in the field of scientific and technical progress. It is largely a matter of ensuring not only that enterprises, production associations, ministries and departments, within the framework of their competence and in close connection with current and long-range plans for the introduction of new technical equipment, combine, coordinate and in all ways support such stimulae, but also to ensure that specialized services are created for planning and organizing rapid and efficient introduction of advanced practice, efficiency proposals and inventions. Of course, this requires the corresponding production base and material and financial resources. As is shown by the experience in the development of technical and organizational-economic creativity of the workers as well as the entire history of socialist competition in the USSR, expenditures on this are usually recouped rapidly and many times over. During the course of the scientific and technical revolution, expenditures on multiplying and better utilizing the creative potential of the workers are the most effective, which coincides with the main direction of the modern economic strategy of developed socialism.

2. The Progress of Science and Technology--A Main Lever in the Creation of a Material and Technical Base for Communism

From what has been said it is clear that a decisive area in the construction of a material and technical base for communism is the one which provides the objective prerequisites for the development of the scientific and technical revolution, the achievement of the greatest results in the increase in labor productivity and increased efficiency of public production. "The progress of science and technology," noted L. I. Brezhnev, "is the main factor in the creation of a material and technical base for communism. This is why we must clearly see the prospects that lie in such an important matter as the development of science and technology and we must take them into account in our practical work." ("Leninskim Lursom," [A Leninist Course], Vol 3, p 257).

The party relies especially on branches that determine the further growth of the country's economic might, the expansion and radical renewal of fixed capital and the acceleration of scientific and technical progress.

Along with the appearance of new kinds of production in the structure of industry, under the influence of the scientific and technical revolution there is a considerable increase in the proportion of branches that determine to a larger degree the technical progress and the efficiency of the national economy--machine building and metal processing, the chemical and petrochemical industry and electric power engineering. The proportion of output from these branches in the overall volume of industrial output during 1966-1977 increased from 24.3 to 36.7 percent. Further progress of heavy industry was one of the prerequisites for the accelerated development of the production of means of production and objects of consumption as well as for the improvement of the structure of this production.

The Soviet Union is the only country among the large industrial states of the world that bases its economic development on its own fuel and power resources. In 1980 the production of electric power will reach almost 1,300 billion kilwatt-hours, which will be almost double the 1970 level. Moreover, we intend to use electric power from inexpensive solid fuel more extensively for production. We have earmarked a program for the construction of atomic electric power stations with more rapid development of atomic energy in the European part of the USSR. The party devotes constant attention to further development of the fuel and power complex and to efficient and effective utilization of natural resources in the power that is produced.

Much is also being done to improve the structure of machine building so that it will become more flexible and receptive to technical innovations. The highest growth rates are intended for atomic, metallurgical and chemical machine building and also a number of branches of the electrotechnical, radioelectronic and machine tool building industries and instrument building. Thus a basis will be created for large qualitative advances in all branches of the national economy.

One can judge the growing rates of scientific and technical progress from the scope of the assimilation and output of new, more progressive kinds of products. While under the Eighth Five-Year Plan we assimilated production and began series output of 8,400 new kinds of industrial products and under the Ninth Five-Year Plan this figure amounted to 16,500, during three years of the Tenth Five-Year Plan it amounted to 10,300. All these strides in the technical base exert an immense influence on the socio-economic development of a socialist society.

As we know, each means of production is characterized by the unity of two of its aspects--productive forces and production relations which are inseparably interdependent and are constantly interacting. But the degree of all social development depends, on the final analysis, on the level of productive forces that has been achieved within the framework of each historically determined means of production. On the basis of the quantitative and qualitative growth of the means of production and the main productive force of society--the worker--there is improvement in the entire system of socialist production relations and the economic basis of developed socialism.

The scientific and technical revolution draws more and more attention to the nature and content of human labor. In the future there will be essential transformations of the entire existing mode of labor activity. Despite the fact that socialism in the first stages of its development relies on the material and technical base created by capitalism, from the very beginning man here has a completely different relationship to labor than that under capitalism where labor is essentially compulsory and is an external necessity. The new production relations that are based on fraternal cooperation and mutual assistance of workers who are free of exploitation engenders a new kind of socialist cooperation in labor. The labor of the worker under socialism reveals its directly social nature, which opens up the possibility for labor and social-political initiative and makes it possible more actively to instill in all workers habits of conscientious, organized and responsible participation in collective labor and then an awareness of the need for these habits.

In a socialist society scientific and technical progress is directed toward the creation of completely healthful and safe working conditions. The enterprises themselves and their working premises, as they develop into enterprises of a communist society, will become more and more like modern scientific institutions with a broad network of experimental laboratories and shops.

The essential differences between physical and mental labor are still not fully appreciated under socialism. They are related primarily to the modern level of the development of implements of production and the consequences of the division of labor that have been inherited from the past. Therefore a major role in solving the problems of overcoming the essential differences between mental and physical labor is played by the scientific and technical revolution, a powerful stimulator for bringing them closer together. The extensive introduction of automation, telemechanics, radioelectronics and so forth will lead to the saturation of physical labor with intellectual content, to a rise in the degree of its complexity (and this means also the requirement of better qualifications for workers), to the improvement of labor conditions and to the expansion of the possibilities for creativity. Automation makes it possible to eliminate less skilled labor and therefore there is an increase in the proportion of workers engaged in the process of servicing equipment. These new categories of workers can not do without high qualifications of an engineering and technical type.

In the process of development of the scientific and technical revolution one overcomes the historical backwardness of the development of agricultural production and gradually erases the essential differences between industrial and agricultural labor, which is an important constituent part of the establishment of a socially homogeneous communist society and the surmounting of the differences in culture and living between the city and the country.

At the basis of the transformation of agricultural labor into a variety of industrial labor lie changes in the technical base for production. When this process is completed, in terms of its level of technical support, scientifically substantiated technology, the organization of production and productivity and the nature and content of the operations that are performed, agricultural labor will be homogeneous with industrial labor and the essential differences between them will disappear. The nonessential differences conditioned by the effects of natural conditions and the factors utilized in production will remain and will determine the specific nature of labor and the peculiarities of the means and objects of labor.

The favorable effect of the scientific and technical revolution on all spheres of the life and activity of a socialist society are indisputable. In our country we are expanding the front of scientific research in an unprecedented way, and the scientific production associations and entire branches have reached advanced technical goals. Many kinds of equipment and machines and a number of technological processes are on a par with the best world achievements. But it will be necessary to do much more in order for the achievements of science to be included in mass production. The development of the scientific and technical revolution and the realization of its achievements in a developed socialist society are not a spontaneous process, but a complex object of control.

Party documents not only point out the strategic goals of the development of science and the principal references points for the activity of scientists, but they also determine the ways of further increasing the creative potential of scientific collectives, increasing the effectiveness of scientific activity and strengthening its ties with production and the multifaceted revolutionary transformatory practice of a society which is constructing communism. Soviet scientists actively support the party and state policy in the area of science and they are concentrating their efforts on solving crucial practical problems, above all comprehensive development of the scientific and technical revolution as a main means of creating a material and technical base for communism.

An important aspect of the control of scientific and technical progress is the development of a unified technical policy. One of the advantages of a socialist society consists in that our planning system for the economy makes it possible to utilize this powerful factor for accelerating the intensification of public production. Institutes of the USSR Academy of Sciences in conjunction with ministries and departments have prepared a draft of a

Comprehensive Program for Scientific and Technical Progress and Its Socio-Economic Consequences for 1976-1990. It constitutes an organic part of current and long-range planning and gives reference points, without knowledge of which one can not successfully manage the economy. Many scientific research organizations are continuing to work on improving the comprehensive program.

In the Main Directions for the Development of the USSR National Economy in 1976-1980 adopted by the 25th CPSU Congress, there is a special section called "The Development of Science" which earmarks the main tasks of research in the area of social, natural and technical sciences and points out the need for priority development of comprehensive research.

In 1976-1980 the Committee for Science and Technology developed 200 comprehensive programs of an interbranch nature. They stipulate that more than 50 percent of the assignments will be carried out under the current five-year plan and the number of jobs that were begun under this five-year plan will be completed under the next. Each such program is a totality of work that is coordinated in terms of resources, those responsible for carrying it out and the time periods for completion and each has an organizational coordinator. This essentially distinguishes comprehensive programs from the coordinated plans which were used previously.

Among the comprehensive programs, attention is attracted first of all to the program for the development and improvement of machine building, which envisions further development and production of complexes of machines and technological lines as well as increased unit capacities of aggregates and installations. This program is especially important in connection with the fact that the 25th CPSU Congress pointed out the need to create a system of machines which entirely embraces all of the technological process, mechanization and automation of labor-intensive kinds of production.

The comprehensive programs envision a large volume of work related to the development and improvement of the country's energy systems, technology for metal production and the extraction of coal and petroleum, agricultural production, planning and administration on the basis of electronic computer equipment, and so forth.

In the development of technical equipment and technology, a large role is played by further strengthening of the ties between science and practice. At the present time various forms of their interaction have appeared and are developing. The number of scientific production associations, which mark an organic merging of science and production, is continuing to increase, and they are becoming the main organizational unit of modern production. Many enterprises, especially large ones, have created scientific research centers and plant shops. Economic agreements and agreements for creative cooperation have acquired a broad scope. On the basis of them, scientists and workers of industry solve important scientific and technical problems together. Joint research subdivisions are appearing for the study of large problems and the realization of the results that are obtained.

A necessary factor in the successful utilization of the achievements of the scientific and technical revolution is the creation of economic conditions that motivate organizations and enterprises to develop rapidly new models of technical equipment and advance technological processes, to assimilate innovations in short periods of time and to withdraw outdated items from production. The implementation of the decree of the CPSU Central Committee and the USSR Council of Ministries, "On Improving Planning and Strengthening the Influence of the Economic Mechanism on Increasing the Effectiveness of Production and Improving the Quality of Work" will contribute to solving this problem.

The task set by the communist party is of historical importance: to combine organically the achievements of the scientific and technical revolution with the advantages of the socialist system of management. To develop more extensively the forms of combination of science and production which are inherent in socialism is a further theoretical development and enrichment of Marxist-Leninist teaching concerning the motive forces of social progress with respect to the modern age. As V. I. Lenin pointed out, "Socialism is unthinkable without . . . technical equipment that is constructed in keeping with the last word in the latest science . . ." (Poln. Sobr. Soch. Vol 36, p 300). The attention of the 24th and 25th CPSU Congresses was drawn to this cornerstone of scientific communism, which requires the combination of the most advanced science and technology with the most progressive social structure, as the primary problem for the development of a socialist society.

Under modern conditions developed socialism is the most adequate economic and social form for the realization of the immense potential of progress in science and technology. Among the advantages of a socialist society which contribute to realization of the achievements of this progress, one must point out first of all the leading role of the Marxist-Leninist party, public ownership of the means of production, planning and proportionality in the development of the national economy, organic combination of long-range and current tasks of the society, and also private, collective and public interests, the high level of social awareness, the correspondence of scientific-technical and social progress in their final goals, and, finally, efficient utilization of natural resources and productive forces and economic integration of the CEMA countries.

The combination of the achievements of the scientific and technical revolution with the advantages of socialism is a historic task of the entire socialist community and it is being resolved through planned development, through the constant development of the labor and socio-political activity of the masses, the upsurge of socialist competition, the disclosure and growth of the society's intellectual potential and the all-around development of the individual and all members of society. I should like to emphasize once again that, while devoting constant attention to improving technical equipment and production technology, developing science and providing for the introduction of its achievements into the embodied elements of material production, it is also necessary to see the primary significance for the new society of the development of the major productive force--man --and the disclosure of all of his creative capabilities.

What has been said above makes it possible to clarify, in the most general sense, of course, the main directions, features and criteria for the creation of a material and technical base for communism.

We are speaking primarily about a high level of collectivization of production and labor on the scale of the entire society; about scientifically substantiated and effective utilization of the advantages of collectivization under centralized administration and planning, which has as one of it major goals the organic combination of science and production; about the constant growth of the efficiency of public production and labor productivity, economy of time on a broad social scale; and about improvement of all branches of production administration on the basis of more and more complete utilization of the advantages of democratic centralism.

The creation of a material and technical base for communism presupposes further surmounting of the essential differences between classes and social groups and the elimination of differences between members of society not only in terms of their relation to property, but also in terms of the nature of their participation in its control. And favorable possibilities are created for this by the nationwide character of our state and the further deepening and development of socialist democracy.

Another important feature of the construction of a material and technical base for communism is the establishment of material incentives for the development of public production for all occupational and socio-demographic groups of the population; the fusion of the ideological and moral stimulae for labor with the need for it; the development, on the basis of this, of attitudes toward labor and the need for labor for the general good as an important material factor in economic life; the mutually stimulating development of production and the worker; the transformation of labor into a creative process; and the formation of a truly creative, responsible attitude toward the labor of each person.

Finally, an essential indicator of the resolution of our programmed task will be the changeover to the communist principle of distribution after the achievement of a sufficiently high level of satisfaction of the reasonable material and cultural needs of all members of the society.

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BELORUSSIAN PROGRESS IN ENVIRONMENTAL PROTECTION DISCUSSED

Moscow SEL'SKAYA GAZETA in Russian 13 Feb 80 p 1

[Editorial: "Guard Nature"]

[Text] Guard nature... These words hold both a task and exactingness, and an appeal. And the structure of thoughts is characteristic for the Soviet people: in protecting their own nature to affirm the creative principles in life.

There is the kolkhoz "Komintern" that neighbors with Mogilev. During the five-year plan the city "confiscated" from it about 500 hectares of land. But even under such conditions the laborers of the farm add beautiful features to the landscapes here. The kolkhoz wisely uses the local sanitation resources: the grove has been cared for that has become a rest zone, a school for water sports has been opened on the Dnieper, and near the mineral source it is planned to build a sanatorium-dispensary. In the article of expenditure of the kolkhoz are both flowers and a museum of nature. They know that if they spend on a pond there will be fish. They have the same businesslike attitude towards the fauna. With the right of public inspectors the kolkhoz workers carefully protect the site of habitation of beavers, wild ducks and partridges. And they have found the means to compensate for the decrease in agricultural crops. The agronomical service was dealt with: deliver to the fields the upper fertile soil layer from the construction sites! Thus their harvest strength rose.

One can name a whole series of farms where the goods of their own environment are used wisely and competently so that they are not exhausted and so that they last a long time. These are the kolkhozes imeni 20th CPSU Congress of the Dubrovenskiy, "17 sentyabrya" of the Barnovichskiy, "Leninskiye dni" of the Berezinskiy rayons and many, many others.

It is more complicated to organize environmental protection on the scales of a rayon, for on this level the program of measures must not simply absorb the experience of the local enterprises, kolkhozes, sovkhozes, rural soviets and public initiatives. It is important to take a scientific look at all the resources of the rayon, land, water, forest, and evaluate their dynamics, and intensify responsibility for a zealous use of natural resources as required by the Soviet legislation. An environmental orientation is becoming ever more characteristic for the rayon plans of management.

At the end of the past year the Communist Party of Belorussian Central Committee, the Belorussian SSR Council of Ministers, Belorussian trade union council and the Lenin Young Communist League of Belorussia Central Committee adopted a decree "On Organization of Republic Socialist Competition for Environmental Protection and Efficient Use of Natural Resources." A matter of honor of the laborers in each rayon is actively included in this competition. The decree is aimed at solving the most important questions of ecological problems. Let the calling of good works of the defenders of nature be broadened, let it be supplemented with new initiatives!

The following requirement has been addressed to each manager: make decisions that are irreproachable in relation to nature. The rural specialists must be leaders of such competence. It is inexcusable for the agronomist if the machine operators work on powerful equipment without consideration for the latest achievements in the area of soil protection. Which weapon to use to preserve the harvest, agricultural engineering, chemical or biological, is the problem the agronomist must solve, taking into account the specific situation in the environment. Questions linked to protection of rivers and reservoirs from pollution are very urgent. Strong resources with which the farmer is now equipped with, mineral fertilizers and toxic chemicals if they are carelessly used and stored can become the cause of dangerous pollution of rivers and lakes. Judging from the signals from the localities the large animal husbandry farms often threaten the water sources. Their treatment works do not always operate efficiently. The solicitous livestock expert will notice this in time and will immediately take measures. Another will only recall suddenly when an emergency situation happens. Many kolkhozes and sovkhozes only talk about setting up special areas for washing equipment where oils and oil products can be trapped, but practically nothing is undertaken. This is a miscalculation of the engineering service. No burning demands will free the economist from concerns of environmental protection.

Scientific and technical progress in our country is directed such that the Soviet people are guaranteed the best environment. Many decisions of the Communist Party and the Soviet government in recent years have treated these questions. The USSR is implementing a broad program of efficient use of natural resources and their protection. These measures comprise an independent section in the state plans of the national economy, and large allocations are made for their fulfillment.

An increased scientific and technical potential permits our republic to implement a large complex of measures for environmental protection. Modern structures are being introduced for treatment of waste water. Many enterprises have acquired systems of circulating use of water. On the territory of Belorussia now there are over a thousand ponds and reservoirs. They are used to regulate the moisture content of the soil on reclaimed lands and run-off of rivers, decrease in floods, and for the purposes of pisciculture and for recreation of the workers. Drafts have been worked out for the best organization of the territory of Poles'ye, the basins of West Dvina, and Sozh. New preserves, sanctuaries, and reservations are being made to save the most valuable forests, lakes and peat beds, cranberry swamps, medicinal plants, animals and birds. In the interests of protecting nature specialists have suggested improving a number of technological processes. The scientist-ecologists give their recommendations to the economy and production so that they are developed in agreement with nature. The scientists of the agricultural higher educational institutions should be included more actively in such developments.

At all sections of management it is necessary to understand the laws of ecological equilibrium, and to be concerned also about the "nonmaterial goods" of nature on which our health depends. In these days where new bills are being discussed in the press on protection of the atmospheric air and on the protection and use of the animal world, the letters of our readers are filled with state concern of a national property--nature. Moved by a feeling of civil duty and patriotism the Soviet people in their suggestion letters prompt which advantages of the socialist structure need to be used more completely in order for our kray to improve and the wealth of our nature to multiply.

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USSR

UKRAINIAN CONFERENCE DISCUSSES WATER MANAGEMENT

Kiev RABOCHAYA GAZETA in Russian 17 Jan 80 p 3

[Article from RATAU: "Guard and Multiply Water Resources"]

[Text] Tasks for the further improvement in the use and protection of water resources in light of the decisions of the November (1979) Plenum of the CPSU Central Committee and the speech at it of the General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev were discussed at the all-union conference of workers of the water management organs that ended on 16 January in Rovno.

The reporter, deputy minister of melioration and water management of the USSR, I. I. Borodavchenko and the speakers noted the enormous national economic value of the efficient use and protection of water resources. This will be promoted by the implementation of a complex of work directed towards guarantee of the cleanliness of reservoirs, and improvement in their use. The volume of meliorative construction is rising, and erection of irrigation and drainage systems is based more and more on the recommendations of science.

In the Ukraine, in particular, in order to supply the industrial centers of Donbass and the Dnieper region better with water, as well as the southern oblasts that are important granaries extensive work is being done to regulate and transfer the flows of rivers, and expand the use of underground storages of moisture. The minister of melioration and water management of the Ukrainian SSR, N. A. Garkusha spoke of this in his speech at the conference. In the republic a cascade of reservoirs has been set up on the Dnieper, and several water routes have been laid in the arid regions. Last year construction was completed of the main trunk canal of the Kakhovka irrigation system extending 130 kilometers. The canal Dunay-Dnieper is being laid, and coverage of the Dnieper-Bug liman is envisaged.

The water resources are being used more economically. In the years of this five-year plan the annual output of the circulating systems of industrial enterprises rose by 10 million cubic meters. Some of them no long discharge any effluent into open reservoirs. In Khar'kov an automatic system has been developed and is being introduced for the efficient distribution of drinking water, which makes it possible to have timely removal of its excess pressure in the network, and reduce the nonproductive expenditures. Such a system is also being made for Kiev. The diversion of underground water is being regulated, and their protection from pollution is being improved. The land reclaimers of Rovenshchina have accumulated valuable experience here.

At the same time the conference stressed the need to develop a plan for the comprehensive development of water management, its reinforcement with the necessary scientific studies, and better study of the problems of small rivers. More attention should be paid to the questions of preservation and protection of water from pollution, development of norms for the use of water by the enterprises, and accurate accounting should be set up here. A number of kolkhozes and sovkhozes are violating the technology for irrigation of agricultural crops, which will lead to overconsumption of moisture, overwatering and salinization of soils. Shortcomings occur in the use of underground water to meet the needs of the population. A large volume of work should be done in the matter of treating the effluent, and implementing closed water use for the production needs.

The appropriate recommendations were adopted on the discussed questions.

G. I. Vashchenko, member of the Politburo of the Ukrainian Communist Party Central Committee and first deputy chairman of the Ukrainian SSR Council of Ministers, K. P. Mitryushkin,head of the sector of the agricultural department of the CPSU Central Committee, N. F. Vasil'yev, minister of melioration and water management of the USSR, T. I. Panasenko, first secretary of the Rovno party obkom, D. I. Protsenko, chairman of the Ukrainian SSR State Committee on Environmental Protection, representatives of the Gosplan, and a number of ministries and departments of the USSR participated in the work of the conference.

The participants of the conference became acquainted with the experimental work of the water management organs of the Rovenskaya oblast.

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LATVIAN SAILORS INVENT METHOD OF DISCOVERING SEA POLLUTERS

Riga SOVETSKAYA LATVIYA in Russian 6 Nov 79 p 4

[Article by V. Lushchevskiy: "An Interesting Experiment"]

[Text] How does one find a party guilty of leaving remaining fuel oil or an oil slick on the water? What can be done so that on board any tanker one can know precisely that ballast water with residuals of petroleum that has been poured overboard will definitely "give the violators away," and sooner or later there will be "substantial proof" of their guilt of violating the rules of shipping and protection of the environment?

Sailors of the Latvian maritime steamship line, in conjunction with representatives of other departments, recently became participants in an interesting experiment that was conducted on the Baltic Sea. Its method was developed by Swedish scientists, but a direct contribution to the research should be made not only by sailors, but by representatives of the republic state inspection team for protection of the Baltic Sea and a number of interested departments of the Russian Federation, Latvia and Estonia.

The idea was advanced for experimental investigation that residuals of petroleum products in the tanks of tankers can be "marked" and made recognizable. To mark them scientists suggested using extremely small metal particles--alloys of iron, nickel and zinc. Their existence in the ship's containers in a strictly determined dose could not harm the quality of the cargo, but would be real evidence against the guilty parties.

The experiment should confirm how realistic the calculations of scientists are and whether there is a guarantee of determining the guilty parties by removing residuals of their petroleum from the surface of the water. Participating in the experiment are the Latvian tankers Limbazhi, Balvy, Artem and other ships that regularly call at the petroleum sheds of Ventspils and Kalypedy. The unique experiment is being conducted on the basis of an international administrative and technical agreement among the countries of the Baltic basin within the framework of the convention for the protection of the maritime environment.

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USSR

HYDROELECTRIC POWER STATIONS AND MARINE ECOLOGY DISCUSSED

Tbilisi ZARYA VOSTOKA in Russian 5 Jan 80 p 2

[Article by T. Ambokadze: "Prototypes of Future Hydroelectric Stations"]

> [Excerpts] Prototypes of future GES's originate in schemes, technical and economic substantiations, and in technical and working plans that are created by the planners. Taken together they comprise the basis of engineering thought, of design decisions and financial evaluations, without which not a single construction project is begun and no GES grows.

". . . our duty," said General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev at the November plenum of the party Central Committee, "is to think ahead of time about power engineering of the future, on which the country's growth largely depends." Power engineering is one of the most important, key problems of our national economy. The plan for its development in 1980, which was discussed at the second session of the 10th convention of the USSR Supreme Soviet, envisions, in particular, increasing the output of electric power in the final year of the five-year plan by 4 per cent as compared to 1979 and increasing it it to 1.295 billion-kilowatt hours.

On the Path to the Inguri Cascade

The cascade at Inguri (like the one at Rioni) shows that our rivers have begun to be used for obtaining electric power not just once, but repeatedly. The builders still have to release the last aggregate of the Inguri GES and higher up stream they have already begun to construct the next section of the Khydoni GES cascade, with a capacity of 740,000 kilowatts and an annual output of 1.74 million kilowatt hours. The dam here will also be arched, but it will be lower than the Inguri dam. Let us add that the first step of the future Namakhvanskaya hydroelectric station on the Rioni river is also to have an arched dam that is 166.5 meters high. Arched dam construction, as we can see, is becoming traditional in Georgia, which is brought about by the republic's complex mountain topography.

The Khudonskaya and Namakhvanskaya GES's are the most important hydroelectric power structures in Georgia to be built in the next decade--up to 1990. They are the largest and, according to the calculations of planners, the most profitable. Here it is possible to use collectives and production resources that were used during the course of the construction of the Inguri cascade and the Vartsikhskaya GES. And on the Inguri itself, higher up stream, two more GES's will appear: the Tobarskaya and Pariskaya.

The utilization of the Inguri, Rioni and several other rivers for hydroelectric power construction, with the corresponding development of base electric power stations, will make it possible to create normal schedules in the electric power system up to the year 2000 and thus provide for the national economy's continuous consumption of electric power.

This is the outline of the future if one procedes from the idea that the potential supplies of energy of the republic's rivers are adequate not only for the foreseeable future. But even specialists are seriously alarmed--these supplies are not limitless. And there will be an increasing shortage not only of "white coal" but of water itself.

A Look Into Tomorrow

We have seen a new approach to the utilization of the republic's water resources--a comprehensive one. This is another sign of the times. We have begun to see in our rivers not only a source of electric power, but also of moisture for irrigating fields, water for our growing industry and the needs of the population. And example of this is the construction of the Zhinval'skaya hydroelectric center which envisions together a hydroelectric station, and irrigation system, and the supply of the city of Tbilisi with drinking water from the water reservoir here.

The principle of comprehensiveness will apparently be applied increasingly. The more so since water resources are distributed extremely irregularly in nature and the consumption of water for irrigation of the land in various regions of the republic and Transcaucasia as a whole are far from identical.

The division for long-range planning of the Tbilgiproproyekt Institute, on an assignment of the main water resources administration of the all-union Soyuzvodproyekt association of the USSR Ministry of Water Management have begun to study the problem of territorial distribution of water resources of the Caucasus and have compiled a multivolume "Survey List" which suggests nothing other than . . . diverting some of the flow of the rivers from some regions into others (the main engineer of the plan is the chief of this division, Pavel Vasil'yevich Dzhordzhadze). More concretely it is intended to divert water from the northwestern region of the Black Sea coast to the basins of the Azov and Caspian Seas, to divert the flow of the Chorokhi, Inguri and Rioni rivers to the Transcaucasian zone of the Caspian or (there is also a second variant) into the tributary of the Terek and Baksan, and to divert water from the northern Caucasus and some of the water from the basin of the Sulak river into the Transcaucasian zone. At the place of the diversion it is intended to construct cascades of electric power stations which should produce a large quantity of electric power.

The design which is quite large-scale is to change the existing system of the rivers, to reduce or increase their flows, and to make these rivers irrigate land that is new for them. And from an engineering point of view it is realistic.

However, the problem goes far beyond the framework of technical possibilities. It is important to know what the national economy will gain from this and what it will lose. One must compare the effect and the loss. In other words, to operate in the old way is to follow the time-honored principle, "measure seven times and cut once." This is necessary so that everything does not fall apart when it is too late and it will be necessary to pay for lack of foresight. And the larger the design, the more thoughtful and circumspect the approach must be. When suggesting one solution or another the designers thus take (or, more precisely, should take) a certain portion of responsibility for the final result. They must see far into the future, from the positions of state interests, and they must think.

The questions of diverting rivers in the "Survey List" are handled one-sidedly, only from engineering standpoints, and are presented in the form of general considerations. It does not have serious economic substantiation and the main thing is that there is no accounting for changes in nature or ecological consequences which such intervention should cause.

Nonetheless the misgivings expressed by specialists, which pertain not only to the protection of nature, but also to hydroelectric power and the utilization of water resources, are not groundless; they are based on the lessons of life and on practice. Let us turn to the materials of official judgements of the "Survey List," documents that have been drawn up regarding this issue, and opinions expressed in conversations.

Sh. Akhalkatsi (Gruzgiprovodkhoz Institute):

"We have already intruded into the vital activity of two important rivers, the Inguri and the Rioni, and we have violated the process established by nature . . . let us limit ourselves to that for the time being--let them serve as a laboratory for us to reveal the scope of the damage . . ."

A. Aslanikashvili (Institute of Geography of the Georgian SSR Academy of Sciences):

"There is no objective reason to think that the development we are discussing is 'comprehensive.' It does not take into account the extremely varied complex of the geographical environment or the change in the water environment whose composition will directly affect all other components of the natural complex and, through them, the national economy . . ."

The first and most important misgiving expressed by specialists and scientists is that diverting the rivers will cause threatening, possibly irreversible, ecological consequences. There will be a reduction of the removal of solid discharges onto the seashore, which will sharply increase the processes that destroy the shore ("imagine what will happen to the Batumi if the water from the Chorokhi is diverted into it! The city stands on a promentory consisting of deposits and we might lose it completely,"--I had occasion to hear this repeatedly). The process of freshening of sea water will be violated and this means that the conditions for the feeding of fish will deteriorate and fishing will suffer.

"Nobody can tell the degree and the way a reduction of the flow of rivers will be reflected in the quantity of underground rivers, the nature of the soil and plants and, above all, the forests," says the deputy chairman of the State Committee of the Georgian SSR for the Protection of Nature, Candidate of Geographical Sciences, A. Kiknadze. "These questions have not been raised and are not being studied by natural scientists of the republic."

An especially large amount of damage can be caused to the resort zone of the Black Sea coast of Georgia and to its economy. The system that has been established here involves an abundance of moisture and the rivers of this zone are not simply the ordinary water resources; they are also a factor in maintaining the unique natural environment which has made it possible to create an all-union sanitorium here.

The opinions finally boil down to one--one must not disturb the rivers of this region: the Tuapse, Asha, Psezuapse, Shakhe, Sochi, Mzimta, Psou, Bzybi, Kodori and Chorokhi. P. Dzhordzhadze agreed to this solution: to ask the directive agencies to declare reserves, not to construct any hydrotechnical installations on them and to reduce further study of diverting the flow from the aforementioned rivers, which is considered in the "Survey List."

And so the rivers of the Black Sea zone have dried up. The Inguri and Rioni remain. The scientific and technical council of the republic Gosstroy, which considered the survey list, "Territorial Redistribution of Water Resources of the Caucasus," again came to the same, not undisputed conclusion about the expediency of "studying the possibilities of diverting the flow of the upper reaches of the Inguri and Rioni rivers into the Transcaucasian zone of the Caspian through the northern Caucasus and the upper reaches of the left bank tributaries of the Rioni river into the basin of the Kura river along the Dzhodzhorskaya diversion, in the volume envisioned by the scheme for complex utilization in the regional cross-section."

Here it was taken into account that now the question of global transfers on the scale of the entire country is being studied at increased rates--the flow of northern rivers of the European and Asian part toward the south of the European part and the basin of the Volga River. The research has been in progress for a long time, on the basis of mathematical models, taking into account economic, climatic, physico-geographic and technical factors. As we see, none of this is being done in the republic.

With respect to the Inguri and Rioni rivers, there are serious doubts: to remove some of their water means to reduce the output of hydroelectric power stations that have been created on them. Figures concerning the expected losses are already known. The upper Rioni diversion into the Kura will lead to a reduction in the output of electric power of the cascade of the Rioni GES's by approximately 30 percent, that is, a half billion kilowatt hours a year, and the Ingur-Baksanskaya will reduce the quantity of electric power received from the Inguri GES by 1.57 billion kilowatt hours (not taking into account other planned hydroelectric stations and those already under construction here).

These predictions gave Gruzglavenergo justification to arrive at the conclusion that "the suggested redistribution of the water of the rivers of western Georgia stands directly in contradiction to the long-range plans for the development of hydroelectric power engineering in Georgia and will also lead to a significant reduction in the output of existing GES's."

One thing is certain: today we are not yet ready to study questions of diverting water; they require a comprehensive, complex and thoughtful study, with the participation of a broad circle of specialists. Technical ideas must be reinforced with a serious scientific foundation, economic substantiation and national economic expediency. We need a special organization which could deal with this matter.

I. Mgebrishbil' (Tbilgidroproyekt):

"The study and subsequent compilation of schemes for primary diversions of water will require a long period of time. Expediency of diverting water can be determined only after making all issues more precisely clear. Therefore we think that hydroelectric power construction should be carried out in keeping with presently existing plans for the development of the national economy which has been provided by planning workers . . ."

The very expediency of diverting water is subject to question. One can not think that it was because of a lack of consideration or anger that nature created rivers precisely in the places where they flow and with the quantities of water that exist in them. She did not make her estimates on Whatman paper and she measured not seven times, but a million times, in order to create the existing order and harmony of things. When thinking about influencing even a part of this complex organism, it is necessary to have as constant allies the immortal words Hippocrates addressed to the physicians: "Do not cause harm." And before one can decide to eliminate the shortage of water by making changes in nature, would it not be more correct to study ways of utilizing it naturally--to regulate the flow of the Kura, to apply more modern methods of irrigation and thus to increase the efficiency factor of irrigation systems, and also to utilize underground and recycled water more extensively. In other words, to do that which, in the opinion of specialists, is an immediate matter and is within our capabilities.

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PROPOSED NEW AIR PROTECTION LAW DISCUSSED

Moscow IZVESTIYA in Russian 16 Jan 80 p 2

[Article by O. Kolbasov, head of sector of legal problems of environmental protection of the Institute of Government and Law of the USSR Academy of Sciences, doctor of juridicial sciences: "Guard Nature"]

[Text] Since until recently the needs of the people for atmospheric air were satisfied unlimitedly, and it seemed that the state of the atmosphere could never be altered under the influence of human activity, no realized need developed to regulate the behavior of people in relation to this element of nature by legislative means. During the centuries of existence and development of law it did not contain laws on atmospheric air (while for a long time already laws have been adopted on land, minerals, water, forests and the animal world).

The situation has changed in this century, on a local, and then on a global scale.

Under the influence of human behavior changes have occurred and continue to occur in the gas composition of the atmosphere: the relative percentage of oxygen is dropping and the content of carbon monoxide is rising. Every year oxygen in the near-earth shell of the biosphere becomes lower by 10 billion tons. It is true that in a percentage relationship this is a negligible quantity that does not induce a danger of oxygen starvation. But what awaits us further if the oxygen consumption will occur at such rising rates (say, a jet liner during a flight from America to Europe in 8 hours of flight consumes as much oxygen as 25,000 hectares of forest can produce in this same time)?

This is why the urgent need has arisen for the cooresponding legal regulation of this problem, especially in the production sphere.

Concern for protection of the atmospheric air in the Soviet Union was manifest from the first years of Soviet power. First of all through the system of sanitary-hygienic requirements made for different branches of industry, transportation, and city building. Already on 18 June 1919 V. I. Lenin signed a decree "On Sanitary Protection of Residences" whose content also covered measures for preserving the favorable state of the atmosphere in populated areas.

By now in our country the legal requirements for protection of the atmospheric air have been expressed in the all-union and republic legislation, in the numerous rules, statutes, instructions and other standard acts under the law called upon to affect the practice, regulate the activity of the ministries and departments, their enterprises, institutions and organizations, as well as the officials and citizens. Extensive work is being done to execute this legislation. But partially complete effectiveness cannot be successfully attained in solving the task of protecting the atmospheric air because the legislation itself needs ordering, and qualitative improvement.

Taking into consideration these circumstances the deputies of the USSR Supreme Soviet back at the September session of the USSR Supreme Soviet of 1972 raised the question of the need to issue a law on protection of the atmospheric air and bring into the system of legislation in this area. Then work was started on the draft law. Its first working variant was prepared in the Institute of Government and Law of the USSR Academy of Sciences in September 1976. The perfected text of the bill with regard for the opinions of the ministries, state committees and departments, as well as the councils of ministers of the union republics before it will be examined at the session of the USSR Supreme Soviet has now been published for national discussion.

The prepared law, of course, in the first place will express in a more qualified manner those requirements that were developed in previous years and have justified themselves in practice. These include, in particular, the regulations on banning the putting into operation of any production facilities, newly created or reconstructed if in the process of operation they become sources of pollution or other negative effects on the atmospheric air (article 13). The regulations are preserved and further developed on standardizing the maximum permissible concentrations of pollutants in the atmospheric air (MPC).

At the same time the draft law contains a lot new. First of all one should stress that in preserving the principles of standardization of the maximum permissible concentrations of pollutants the sphere of their action is expanded: the MPC henceforth will act not only on the territory of populated areas, as before, but also on the entire territory of the USSR.

A significantly new statute is that in article 10 on the standardization of maximum permissible emissions of pollutants into the atmosphere by stationary and mobile sources of pollution. This means that for each point of emission, say each pipe, the competent state agencies will issue (or not issue) permission providing for the maximum quantities of emissible pollutants in a unit of time. And if this standard, indicated in the permission for emission is violated, then the created situation, naturally, will be viewed as an infringement of the law with all the consequences following from this: emission into the atmosphere will be limited or banned, while the guilty officials and other workers will be held responsible.

Until this time the legislation, as is known, starts from the need to protect the atmospheric air mainly from pollution only in the limits of the population points. However, such a concept has ceased to satisfy the practical needs. Under modern conditions it is required that the atmosphere be protected not only from pollution, although this continues to remain the main problem, but also from other types of negative effect of society as a result of which uncomfortable living conditions for people on earth could develop. This is why the articles contained in the bill on regulating the effect on weather and climate (article 20), on regulating the consumption of atmospheric air for industrial and other national economic needs (article 10), on preventing, reducing and eliminating the harmful effect on the atmosphere of physical factors (article 19) and others are quite new.

As yet the premeditated effects of man on the weather are usually restricted to breakdown of hail clouds and attempts to artificially induce rain in the necessary region. But even these attempts require great caution, for breakdown of a hail cloud in one place can induce a catastrophic downpour in another. The wider use of weather modifications conceals the danger of other consequences unforeseen today. Taking into account these circumstances the draft provides for a permission order of artificial changes in the state of the atmosphere and atmospheric phenomena.

The question as to the physical effects on the atmosphere, say by forming electromagnetic fields is new. Previously this question was not given value. But recently the studies of specialists have established that, for example, along the air lines of high-voltage power transmission in a radius up to several tens of meters an electromagnetic field is formed that affects the living organisms, in particular their genetic apparatus. The low-frefrequency radio waves are also dangerous. From here follows the need to especially regulate such effects on the atmosphere.

Finally, one should stress the novelty of the regulation contained in article 14 of the bill: it is forbidden to introduce into practice discoveries, efficiency experts' suggestions and new technical systems, as well as acquisition from abroad, introduction into operation and use of technological processes, equipment and other objects if they do not satisfy the requirements set in the USSR for air protection.

Thus, the draft law on protection of atmospheric air extensively and in a qualified manner solves the complicated legal questions of protecting one of the most important components of the environment. In the order of a discussion of the text of the bill and in order to improve it I would like to advance certain wishes.

In articles 1 and 7 and certain others it speaks of the prevention and reduction in the effect on the atmosphere of chemical, physical and biological factors. But nowhere does it say that we are concerned with the effects of man as a result of his economic activity. At the same time natural factors affect the atmosphere. Say, eruption of a volcano definitely pollutes the atmosphere, but it is not a subject of the given law.

In listing the subjects to which the legal requirements of the law are addressed to, in addition to the ministries, departments, enterprises, institutions and organizations one should also mention the associations.

It is expedient to supplement article 14 with an indication that it is forbidden to acquire abroad equipment and technology if they are not provided with the technical resources and techniques for controlling emissions of pollutants into the atmosphere. Currently the plant sanitary laboratories are experiencing great difficulties due to the fact that the equipment purchased abroad and installed emits into the atmosphere substances not subject to control with the help of domestic instruments and techniques.

It would be desirable to bring articles 11 and 24 into agreement. Article 24 states that when a condition develops in the atmosphere that threatens the health and life of people, the executive committees of the local soviets of people's deputies give instructions on the transfer of the enterprises to a special operating pattern or temporarily stop their activity. And in article 11 under analogous circumstances the right to restrict, stop or forbid emissions, all the way to stopping the activity of enterprises is given to the organ that implements state control over protection of atmospheric air.

Finally, the duty to formulate and implement measures for prevention, reduction and elimination of the harmful effect of physical factors (radiation, sonic oscillations, including noises, etc.) of which article 18 speaks, should be addressed not only to the enterprises, institutions and organizations, but also the ministries, state committees, departments and associations.

On the whole the adoption of the union law on protection of atmospheric air will lead to an intensification of the protective measures and more effective legal guarantee of a solicitous attitude of the people to the atmospheric air surrounding them.

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CURRENT STATE OF EFFLUENT PURIFICATION PROBLEM DISCUSSED

Moscow PRAVDA in Russian 7 Jan 80 p 2

[Article by V. Dikarevskiy, professor, doctor of technical sciences, in the column "Problems and Judgments": "Guardians of Purity"]

> [Text] Water is one of the most important natural resources. Modern production, agriculture, and our well-organized daily life require an enormous quantity of it. In the process of use water is contaminated and needs to be purified. Different mechanical, biological, chemical and physical-chemical methods have been developed and are being used for this. The question as to the expediency and efficiency of a certain degree of purification must be solved, as a rule, on the basis of economic computations with regard for the damage from environmental pollution.

The use of circulating water production cycles is possible only on the condition of high-quality purification. It is urgently necessary also for protecting the cleanliness of reservoirs. For as yet it is impossible to do without discharge into them of if but part of the waste water. First, because the universal introduction of internal drainage production processes and waste-free production will take a long time. And second, the economic waste water, even on the condition that they will be partially used to supplement the circulating water production cycles, still will be surplus in enormous quantities. Their use to irrigate agricultural fields is possible only for 1-3 months in the year and far from everywhere.

The quality of the waste water depends not only on the method of purification, but also to a great degree on how the treatment plants are operated. At the same time as yet this question is not given sufficient attention. Certain economic leaders do not clearly imagine that here complicated biological, chemical and physical processes are occurring, and that to control them highly skilled specialists are needed. Often they are totally not provided for in the staffs of the enterprises, and random people work at the treatment plants, unprofessional servicing often leads to a situation where the capital investments, energy and materials are used with a very low effect.

Today in our country several institutes are already training engineer-technologists for purification of natural and waste water. Engineer-experts are also being graduated for the recovery of certain wastes of production, for example, the pulp and paper industry. However, as yet their number far from satisfies the need for personnel of this profile.

In the Academician V. N. Obraztsov Leningrad Order of Lenin Institute of Railroad Transportation Engineers there is a department of "water supply and sewer system." It has graduated over 2,000 specialists, including about 750 in the years of the Ninth and 10th Five-Year plans. Now the department is ready to open up a specialization on purification of natural and waste water. The graduates of out institute are faced, in the first place, with not permitting pollution of the reservoirs and soil in the regions of construction of the Baykal-Amur trunk line. Under conditions of permafrost and short northern summer self-purification of water and soil, as is known, occupies three times more time than, for example, in the central belt of the European sector of the USSR.

Being present at the assignment of young specialists, annually we see how great the country's need is for engineers on water supply and sewer systems. There are especially few specialists with higher education working to operate the treatment plants.

It appears that the situation needs to be corrected immediately. This requires in the first place provision of the appropriate appointments at the enterprises and determination of the real need for specialists on water purification. The scientific research organizations are faced with generalizing the leading experience of operating purification stations and preparing the appropriate recommendations. Especial attention should be given to the introduction at the treatment plants of automation, for the people working here have to deal with polluted water. The appropriate specialists are needed for this, but one cannot do without the designing and production of the sensors and control and measuring instruments capable of operating in contact with dirty water.

For the reliable protection of reservoirs from pollution certain economic questions need to be solved. In bygone days it was thought that the cost of water supply and sewer systems comprises about 4-5% of the cost of the main buildings and structures of a production facility or residential settlement. Here the waste waters are discharged into reservoirs either with the most primitive mechanical treatment, or without any at all. Today the construction of the treatment plants alone often is 15 or even 30% of the cost of the industrial enterprise. The operating expenditures are also great. From a narrow departmental viewpoint high-quality purification of effluent quite often is unprofitable. True, in treatment usually valuable substances are recovered but this is expensive and the economic effect is far from always reached. Precipitates of industrial water can be valuable organic fertilizers, but their realization is linked to difficulties since they do not have a "commercial form." Conversion of precipitates into dry powder convenient for introduction into the soil entails very considerable capital outlays and operating expenditures.

However, purification of waste water and preservation of the cleanliness of reservoirs will bear a perceptible economic effect for the state. Pollution of water sources induces additional capital and operating expenditures for treatment of technical tap water. If it is not sufficiently clean then this will lead to impairment in the quality of the product, and will accelerate wear of the equipment. In agriculture the use of polluted water from rivers can induce a decrease in the productivity of cattle and poultry due to diseases. Fishing industry suffers especially strongly from pollution of reservoirs. Such pollution is impermissible from a socio-hygienic viewpoint as well.

Under conditions of socialism the interests of the enterprises can be matched more simply with the interests of the entire society, but under our conditions additional economic levers will be very useful to stimulate an improvement in the quality of effluent treatment. In my opinion, one should study, for example, the experience of the German Democratic Republic. There a payment has been set for the discharge of waste water into reservoirs and the size of this payment depends on the quality of its treatment. In our time we also used a system of fines for pollution of reservoirs. It did not justify itself since it permitted the enterprises instead of building treatment plants to "pay off" with deductions to the state budget. However, now such structures are present almost everywhere, and a levy of payment for the use of fresh water from the sources and for discharge into reservoirs or the municipal sewer system of waste water, as it seems to me, will stimulate concern for the purification of effluent, improvement in the operation of treatment plants, introduction of internal-drainage systems and reduction in water consumption for production needs.

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FERROUS ALLOY PLANT SHUT DOWN BECAUSE OF SMOKE DISCHARGES

Tbilisi ZARYA VOSTOKA in Russian 9 Jan 80 p 2

[Article by V. Kiknadez and A. Gordivenko: "Smoke"]

[Text] In any matter the most important thing to us is the results. That very result which is the bottom line to any work, by which we evaluate others and others judge us. And this approach to the matter is good even though it might be simple: the results are always in evidence.

But this is in general. And when we deal with particulars the results differ. And the difference does not lie in the fact that some results are good while others turn out to be worse--nothing can be done about this; someone is always ahead and someone is always doing nothing more than intending to get ahead. We shall turn to another aspect of the question: the results can easily be divided into important and unimportant. We willingly place the former in the forefront--they show how well we have worked. We notice the latter less frequently, and if we sometimes see them they do not concern us for very long. What does this lead to? Here, understandably, an example is needed. The Zestafoni ferrous alloy plant has given us one.

Not so long ago everything seemed to be going well at this plant. For years it was among the leading plants and this was entirely to its credit because the workers were able to operate here. The plant precisely fulfilled the plan and sometimes exceeded it, and this was very important because the ferrous alloys produced here are needed by many; a considerable proportion of the best kinds of Soviet steel contain them. There was always a great demand for this steel and the Zestafoni plant satisfied this demand well more often than poorly. True, there were difficult times and it was necessary for it to abandon its leading positions. But the plant was stable and this did not lead to significant interruptions.

And everyone was satisfied.

Now everyone is concerned. It turned out that in its present condition the ferrous alloy plant can not and should not operate. This is the way the matter was stated by the head state sanitation physician of the Georgian SSR. And he demanded that the enterprise's first smelting shop be shut down immediately. He demanded this seriously, taking advantage of all of his authority.

What happened with the Zestafoni plant? Should the republic sanitation service and not only it, but also the Georgian SSR State Committee for the Protection of Nature have taken such a clear and resolute position? There is a short answer to these questions: the ferrous alloy plant discharges smoke in excess of all measure and it is necessary to put an end to this because serious consequences could result from its operation. But this answer generates many other questions. And therefore we have to discuss this in detail!

"It is easy, of course, to raise questions," one of the Zestafoni comrades told us, "but let us consider this matter objectively. After all, in metallurgy smoke, undesirable as it is, is still inevitable. This is a specific fact and one must deal with it. There have always been discharges of smoke with this kind of production. Let us consider it this way . . ."

But we did not want to consider it that way. Before our eyes stood a city as it appeared to everyone who entered this area--gray, incredibly smoky, with a cloud of smoke and dust of a terrifying hue hanging over it. . . and we already had figures that were given to us by the main sanitary and epidemiological administration of the republic Ministry of Health: the ferrous alloy plant has more than 200 active sources of pollution of the environment and only 33 of them are equipped with dust and gas removal devices. But this is not all: only five of these devices are in operation and the remainder are idle because they were initially ignored and then disposed of. We also knew that the air basin in these places also its specific feature and this is marked by the closed circulation of the atmospheric air, which means that the smoke practically does not leave here. . .

We already knew a lot about this plant and therefore we wanted to discuss something else.

We wanted to discuss, for instance, the fact that not so long ago there was time when we had many of these smoke- and dust-emitting plants and now only certain ones are left. It is not easy for us to make this reduction, but still it is taking place and it is taking place more rapidly and easily each year. Here in Kutaisi they are already constructing a second section of a large purification collector, which has already appreciably reduced the discharge of unpurified industrial waste into the Rioni and in the future this problem will be solved completely. And they are solving it in Batumi, Tbilisi and Zugdidi. And although this is not cheap, people are making the expenditures, investing millions of rubles in a cause which they consider important and necessary--to reduce the harm caused to the republic's truly unique nature. Yes, so far they are only reducing it, so far these are only the first steps, but still they already signify movement.

Why has there been no movement such as this in Zestafoni? This is what we were thinking about in the administrative offices of the ferrous alloy plant. We were waiting for an answer from plant specialists and searching for it in the heap of reference books, memoranda and explanatory notes.

And then we came across these calculations among the papers: If the Zestafoni plant fails to produce even a single ton of ferrous alloys, on the scale of the country this will be tantamount to the loss of dozens of tons of steel, steel of the highest quality and of the most necessary kinds. And everything became clear and understandable: these calculations trampled everything down. Including common sense.

. . . It was not simple smoke that poured out the plant pipes--it was "shock" smoke that hung over the region. At first it came in a column only out of the pipes. Then it came out of all the cracks of the first smelting shop. It clouded the section for roasting ore in the third shop, and no less in the fourth and second shops . . . and everyone in the Zestafoni plant became very near-sighted in this smoke."

"Now they abuse us at every turn," the plant's head engineer Tengis Vladimirovich Akhobadze told us. "I do not dispute, of course, that it serves us right: there is really a lot of smoke from our work. But, after all, the plant has always had plans and, after all, they must be fulfilled."

We did not argue either. It is necessary to fulfill the plans; that is what they are made for. And the fewer enterprises we have that fulfill their plans, the more quickly our forward movement will stop. But still there is no harm in looking back and one must look to the sides--this, after all, is the way the matter stands. The ferrous alloy plant has not stopped and looked around. They were given a plan and they produced every single one of their tons of alloys.

The first smelting shop, the one whose roof now requires sanitary service, has been in a state of emergency for a long time, and nobody at the plant noticed this. But why? The furnaces operates nonetheless; all six of them produce alloys . . . in other shops the ventilation system has broken down--it has been disassembled and entirely discarded--in a third shop the concentration of smoke and dust has increased each year, especially in the divisions for roasting ore and electrolysis--and they have not lifted a finger to provide for effective purification of harmful discharges here . . . in a fourth shop, for the first time in the country they have mastered operation with furnaces of the closed type, but they required care and so they were changed over to an open system of operation . . . five years ago in the second shop work was completed to start up purification installations that remove 98.5 percent of the discharged gases and dust--but the plant has still not begun to operate them . . .

"The plan and the rates--these are the main things. The rest can wait . . ."

So those whose job it was to consider things here should have considered them in a different way. Thus an immense plant operated although it was clear to everyone that it should not operate in this way and they should not have tortured for so long that which we have come to call our common home--nature.

And neither in the city nor in the rayon were there authorities who could interpret the alarming lines from the accounts of commissions of the Ministry of Public Health and the State Committee for the Protection of Nature who visited here. And the ferrous alloy plant did not become such an authority--of this we are convinced. The plant needed additional tons of ferrous alloys and there appeared those rationalists who head straight for a high percentage in their summaries and this is the only thing that interests them. Well, what about the party raykom? After all, it also knew the conclusions reached by specialists from the Main Sanitary and Epidemiological Station of the Ministry of Public Health of the Georgian SSR, who more than twenty times inspected working conditions at the ferrous alloy plant and the fulfillment of the measures that were earmarked and promised for preventing pollution of the environment. The Zestafonskiy Party Raykom and so did the ispolkom of the rayon soviet here. And they reacted: they considered this question 289 times here. But these discussions produced nothing. And could they really produce anything since the decisions (and they were also made 289 times because it is somehow awkward to meet and not adopt some kind of decision) were unspecific or completely formal? And such decisions are the easiest of all not to implement, especially since nobody will ask about them . . . this activity of the rayon management was for show--and in a case where the matter was about to take a serious turn. They say that they did what they could. But when the time actually came for the change, it turned out that they had actually done nothing. And they had to respond by saying that the rayon party committee had not evaluated in principle that which had taken place all these years at the ferrous alloy plant, that they had reconciled themselves there to a harmful labor stimulus: the first secretary of the Zestafonskiy Raykom of the Communist Party of Georgia, B. Merkviladze was fired from his job. The director of the ferrous alloy plant, A. Tskitishvili, was fired and stripped of his party membership--for interruption of work and for neglect of issues related to protection of the environment, for that enormous harm the enterprise caused to the region. And the republic procurator was instructed to consider the question of his responsibility for violation of the law concerning the protection of nature.

But there was another instance which could have prevented a great deal that happened in the story of the Zestafoni plant. It was given a good deal of information, but it stood to the side . . .

"How did they operate all this time? They simply operated. This is not the first time that I have been in Zestafoni. And every time when I came here from Kutaisi, from the airport, the first thing I did was look at the sky. I would see that there was smoke and felt at ease because this meant that things were in order, that the plant was operating."

This is what we were told by Roman Aleksandrovich Nevskiy, the chief of the all-union Soyuzferrsplav, the manager of that high-level agency which has done a great deal with the plant in our history. We had a long conversation. The doors squeaked, some people looked into the office and asked about a conference, but Roman Aleksandrovich patiently answered our questions, posed his own, and spoke about the complexities and difficulties of production here . . .

"Yes, of course, the plant exudes a lot of smoke--the main board is aware of this. But to be aware is never enough. Practical actions should already have been taken here and there should been interest. Was the main board interested in this? We shall not give a hurried answer."

Work according to the principle "hurry up!" is not new and it was not invented in Soyuzferrosplav, of course. But they have promoted the method of meeting the plan and achieving the final result at any cost. And the main thing, as one could easily understand from the conversation with the chief of the main board, was that the plant must operate--no one would reduce the plant's plan. Where was there time to stop the furnaces and equip them with dust- and gas-removing devices? Neither the plant nor the main board had time for this . . .

If only there had been time for this. We saw an order from the USSR Ministry of Ferrous Metallurgy. It was dated as early as 1973 and in it was written in black and white: the Zestafoni plant is ordered to provide for an increase in capacities of the furnaces of the new fourth shop and, as a result of this, to cease to operate the three furnaces that produce the most smoke in shop No. 1. This order remained on paper--as of today only five of the eight furnaces of the fourth shop have been reconstructed and two shops are emitting as much smoke as ever . . . Did the main board know about this order? They could not but have known. But they did not do anything to implement it here, even though they only needed to do one thing: to demand unconditional implementation of this order from the management of the Zestafoni plant.

Three years ago, when the ferrous alloy plant was literally surrounded by the commissions of the Ministry of Public Health and the republic State Committee for the Protection of Nature, when the demands to halt operation of the first smelting shop had become very persistent already, there appeared another order to the effect that, in order to reduce harmful discharges into the atmosphere, it was necessary to shut down the furnace of the first shop. This order was reinforced by a corresponding reduction in the production plan. This was the exact moment when it would have been possible, finally, to stop and make a serious evaluation: how is the plant operating and what does its operation do to the region. In Zestafoni they passed this moment by at the speed of an express train. And the main board passed over it too . . .

This summer the Gruzglavenergo board raised before the ferrous alloy plant the issue of reconstructing the Zestafoni-1 substation. It had been in operation since 1933 and, understandably, was no longer reliable. It was decided to reconstruct part of the substation. No more was required--shop No. 1 was to be shut down anyway. But here is an extremely interesting document signed by the deputy director of the Zestafoni ferrous alloy plant, G. Kvelidze, dated 11 June 1979: by an order of the chief of the planning division of Soyuzferrosplav, shop. No. 1 will continue to operate under the Eleventh Five-Year Plan and therefore it is necessary to revise the plan for reconstruction of the Gruzglavenergo substation, taking into account the operation of the first shop at full capacity."

The main board thought that it was too much trouble to shut down shop No. 1 --this would have meant dealing seriously with the task of putting things in order and increasing the capacities of furnaces in other shops. And this could always result in interruptions in the work rhythm, losses, and underproduction of products that are in such short supply . . . The plant fulfilled the plan and, it turned out, the plant is operating well.

All this continued to happen for a long time--and this is what is so regrettable now . . .

Now the time has come when everything is going wrong at the Zestafoni plant: now it does not fulfill the plan; for last year it is in arrears for almost 20,000 tons of ferrous alloys; the idle time of the furnaces is now calculated in thousands of hours; and people have begun to leave the dirty smoky plant (five years ago 300 people were released from here, two years ago--523, and last year the number who resigned was even greater). And everyone suddenly understood: much had to be changed at the Zestafoni ferrous alloy plant.

What must be changed and how? A large group of specialists from practically all of the large metallurgical plants of the country are now searching for an answer to this question: they are investigating most carefully each shop and each section of the enterprise. And much of that information which until recently amounted only to memoranda from these specialists is now being included in the order of the USSR Ministry of Ferrous Metallurgy concerning the Zestafoni plant.

What does this mean specifically? We shall not hurry things. Let us just say that it has been decided to put an end to the "shock" smoke. A decision has already been made to halt the operation of three of the six smelting furnaces of the first shop in stages. There should be less smoke over Zestafoni as early as January, and by the end of the first quarter the first shop will have completely stopped pouring smoke and dust into the surroundings: while the furnaces are halted it is intended to carry out capital repair of existing gas purification installations and to install new, highly effective imported equipment whose delivery is to begin this month.

In a word, the matter is no longer at a standstill. And this is reassuring. The program that has been earmarked is large and serious, and its implementation will require a large amount of work. This amount of work, of course, could have been less if it had gained attention at many levels several years earlier. But, as they say, that which didn't happen didn't happen: the smoke clouded our vision. Now, it seems, that time has passed: in Zestafoni, and not only in Zestafoni, they are learning to look at all aspects of their work . . .

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NEW WORDING SUGGESTED FOR STATUTE ON ANIMAL PROTECTION

Moscow SEL'SKAYA GAZETA in Russian 10 Feb 80 p 3

[Article by A. Medvetskiy, head of Belrybvod: "Let the Rivers Hold Fish"]

[Text] Here is a case that took place on the Dnieper last fall. Due to the discharge of untreated waste water at the fault of the kombinat of synthetic fiber of the Mogilev production association "Khimvolokon" 29 tons of fish died with regard for the progeny. Damages totalling about 23,000 R were claimed from the enterprise. The proceedings on this are currently in the inquest organs.

Fish resources are especially damaged by the effect of negative factors. The harvest on the "blue field" depends directly on the hydrological condition of the reservoirs, and on how the fish supplies are preserved and the fishing regulated.

The workers in the Belorussian basin administration for protection and reproduction of fish supplies and the regulation of fishing, in discussing the draft law for protection and use of the animal world were unanimous in the opinion that the adoption of this document is timely and extremely necessary.

Breeding of game fish, fattening, and other features of their biology are directly linked to the conditions of their environment. A drastic change in the usual conditions of existence already in itself is fatal for fish. Precisely for this reason in the main measures for protection of fish supplies a greater part lists what cannot be permitted in reservoirs and on coastal sections. It is forbidden to dump into fishing reservoirs, on the shores and on the ice untreated and undecontaminated waste water of industrial and communal enterprises, to set up barriers and solid obstructions on rivers, channels and canals, to drain water from lakes, etc.

Such restrictions are known to all: fish cannot be caught in places prohibited by regulations and with illegal fishing equipment.

I would like to dwell on certain aspects of the draft law on the protection and use of the animal world. I suggest stating article 12, paragraph 2 in the following wording:

State, cooperative and other enterprises, organizations and institutions can be given the right to conduct game fishing and the trade of aquatic invertebrates and marine mammals at the fishing reservoirs and their sections. Further as according to the text.

In my opinion, such wording specifies the concept of the game section removed from the fishing reservoir.

Article 35, paragraph 2 is better in such wording:

The statutes on the departmental control of protection and use of the animal world that is used by the enterprises and organizations of republic subordination are approved by the appropriate ministries, state committees, and departments with the agreement of the Councils of Ministers of the union republics.

The proposed order for approving the statute will correspond completely to the structure of the ministries and departments.

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